

Three Essays On Trust And Markets

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## DEDICATION

This dissertation topic is particularly meaningful to me. My father has this extraordinary power to evolve business partnerships into genuine friendships that pass the tests of time and economic ups and downs. Through him, I learnt what it meant to have absolute trust in someone and that never losing faith in someone (even in our most difficult moments) is a sign of strength. Thank you for being my inspiration, my epitome of a successful businessperson, for your unconditional support and love, and for your trust in my abilities. Mommy, I was able to move forward confidently because I knew you always had my back and knew that you would be there next to me when I stumbled. Thank you for always being where I needed you most.

This is also dedicated to my best friends who kept me grounded and sane, and, most importantly, to my advisors, Dan Houser and Virgil Storr. You both took a chance in me when I had no direction and showed me, by example, the type of person, teacher, and scholar I want to be. I truly wouldn't have been here without your guidance, your mentorship, and your friendship. Thank you for everything.

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## ABSTRACT

### THREE ESSAYS IN TRUST AND MARKETS

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Trust is an important concept for understanding economic, political and social activities and is correlated with various measures of economic performance. It adds greater flexibility in responding to changing environmental conditions, in reducing risk and in promoting coordination. While trust is not a necessary condition for the formation of strong dyadic relationships, it enhances the set of attainable opportunities by the two parties and thus is a desirable relational quality. In the current economic literature on trust and trustworthiness, most attention has been given to studying their impact on various economic performance measures and to identifying their determinants.

However, it remains unclear how people decide whom to trust as well as when and why they trust strangers. Given Smith's (1981) observation that an expansion of the market is necessary for nations to prosper, examining how trust facilitates and is fostered in formal institutions such as markets appear crucial for understanding economic development.

While it is not a contentious claim to make that trust is present in all (if not most) human exchange, scholars, public intellectuals and everyday citizens seem to reject the notion

that the markets can have ameliorative effect on our social relationships. The economy and society are embedded within each other, so it should not conceptually be a stretch to recognize that our economic interactions can also shape our social preferences and behavior, just as how our social interactions can mold our economic preferences and behavior. In fact, these critics and skeptics tend to only focus on the harmful and destructive effects markets can have on our local and global communities and how the expansion of the market and market values taint our relationships and the goods being exchanged, while ignoring their beneficial influences. This dissertation attempts to dispel these fears and examines how the market can foster trust and trustworthiness. In particular, it focuses on how market activities and interactions can foster social relationships based on trust and trustworthiness.

Critics of markets have asserted that markets undermine morality and that market dealings are unfair and corrupting. In their perspective, the expansion of the market and market values taint the nature of the goods being exchanged and the relationships between the parties to the deal. The first chapter, titled, "Can Trust, Reciprocity, and Friendship Survive Contact with the Market?," gives reasons to suspect this critique of markets and attempts to push back against these complaints. It argues that the market is a social arena where individuals not only pursue their material goals but also exercise their moral selves; after all, meaningful social bonds characterized by trust and trustworthiness can and do develop in market settings. The market depends on and promotes trust and trustworthiness as well as fairness and reciprocity and these values, as suggested by experimental economic evidence, play important roles in successful market exchanges.

The second chapter, titled, "The Emergence of Social Relationships in Markets: An Experimental Analysis," investigates how social ties characterized by trust and reciprocity can be established through market transactions and if these relations affect



subsequent behavior in non-market settings. Social capital theory has stressed how individuals benefit in the market from investment in social ties but how market activity and behavior affect social ties has been underexplored. We use a novel two-task experimental design in which subjects are placed in a market setting (where several features of real world markets are retained but where defection rates are expected to be high) and then a trust setting (where key information about their former trading partners is retained). Individuals display significantly higher levels of trust and reciprocity to those with whom they share “positive” relationships; senders and responders transfer 50% more tokens to counterparts with whom they share relationships characterized by successful market trades compared to those with whom they share relationships characterized by defected market trades.

The third chapter, titled, “The Market as a Process to Discover Whom to Trust,” builds on work within Austrian economics concerning the market as a discovery process (Hayek 1945; Lavoie 1986) and on the market as a social space (Storr 2008; Chamlee-Wright and Storr 2015). Using evidence from the experimental and Austrian economic literature, we argue that the market is a space where people learn about who they can trust and about others’ trustworthiness through market interactions.

## 1. CAN TRUST, RECIPROCITY, AND FRIENDSHIP SURVIVE CONTACT WITH THE MARKET?<sup>1, 2</sup>

### *1. Introduction*

The market is a tool. It is a social machine that links prospective buyers with prospective sellers. It is a social arena where prospective buyers compete with one another to secure the goods and services that they desire, and where prospective sellers compete with each other to attract customers for their wares. If a buyer and a seller agree on the terms of the trade (including the price), the buyer gives the seller something of value (for example, money or a money equivalent) in exchange for the good or service that the seller is offering. Buyers succeed in the market when they secure the goods and services that they want at the price that they are willing to pay (when the utility they gain from the good is greater than the utility that they gain from what they must give up to purchase the good). Sellers succeed in the market when the selling price is greater than the cost (when they earn a profit).

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<sup>1</sup> Published in: Baker, J. A., White, M. D. (Eds.) 2016. *Economics and Virtues: Building a New Moral Foundation*. Oxford: Oxford University Press, 217-235.

<sup>2</sup> This chapter is co-authored with Virgil Henry Storr.

Like any tool, the market can be used for good or for ill. A hammer can be used by a carpenter to build a house and can also be used by the murderer to crack the skull of his victim. A computer can be used to do homework and can be used to bully a classmate. A radio can be used to transmit vital information about evacuation routes in the hours before a major storm and can be used to direct armed militia intent on genocide to their next victims. In each of these cases, it would be a mistake to praise or blame the tool for the praiseworthy or blameworthy purposes that they were used to advance. Instead, in each of the cases above, it is the person and their purposes and not the tool that should be praised or blamed. The same is true of the market. The market can be used to buy books, food and homes, and it can also be used to purchase sex and illicit drugs.

Nonetheless, individuals must often have certain skills or be in possession of certain knowledge in order to effectively use certain tools. To effectively wield a hammer to hit a desired object with a desired level of force, you must have a minimum level of strength and hand–eye coordination. To effectively use a computer to accomplish a particular function, you must possess a certain level of computing knowledge. Moreover, the more that you use a tool to perform a certain function, the more facility you gain with the tool and the more dexterous you become with it. In the case of social tools, the skills that you are likely to develop are social skills, and some of these social skills are socially relevant moral habits or virtues.

The market, then, is a social arena where individuals not only pursue their material goals but also exercise their moral selves. The goods and services that market participants desire and offer, the trading partners with whom they are willing to exchange, and the manner in which they conduct themselves during their market dealings, are all shaped at least in part by their morality. Moreover, to the extent that market participants prefer to deal with certain kinds of people and demand to be treated a certain way by would be trading partners, success in the market will incentivize actors to exhibit certain character traits.

In related work, Storr discusses the moral teachings of the market, that is, the moral sentiments individuals are likely to acquire and develop as they engage in the market (Storr, forthcoming). As he writes, “For the market to promote vice it would have to expose us to circumstances where vice received praise and was thought to be praiseworthy, where the individuals that we encountered were relatively more vicious than the individuals we tended to encounter in other contexts, and where we were rewarded for immoral behavior. None of this appears to be the case in the market” (Ibid.). Rejecting the notion that the market is amoral or that it has negative moral consequences, Storr argues that the market is a moral teacher that tends to punish vices and reward virtue. It places them in circumstances where they are forced to interact with diverse others in a way where they have to be concerned with their desires. Moreover, not only can social bonds survive their contact with the market without being corrupted,

but the market can encourage the development of meaningful social bonds (Storr 2009).

As such, the market makes individuals morally better people.

This is, of course, not a novel view: as McCloskey writes, “Capitalism has not corrupted our souls. It has improved them” (McCloskey 2006, 23).<sup>3</sup> It is also not an uncontroversial view: for instance, it has been argued that markets can destroy individual judgment and conduct (Veblen 1988; Falk and Szech 2013), weaken societal and corporate morality (Marx 1872; Shleifer 2004), hurt altruism and cooperation (Bowles 1998), and have unintended adverse effects on social norms and informal institutions (Frey and Oberholzer-Gee 1997; Deci, Koestern and Ryan 1999; Falk and Kosfeld 2006; Sandel 2012). This chapter is an attempt to push back against these complaints and to further the argument that the market is a moral teacher. Specifically, we argue that the market depends on and promotes trust and trustworthiness as well as fairness and reciprocity. Additionally, we argue that the market is an arena where meaningful social bonds characterized by trust and trustworthiness can and do develop.

Summarizing the arguments offered by Michael Sandel, Section 2 briefly engages a common but often persuasive critique leveled against the market that market dealings are unfair and corrupting. Sections 3 and 4 use evidence from the experimental literature to highlight the important roles that trust and trustworthiness, as well as fairness and

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<sup>3</sup> See also Hirschman (1977) and Zak (2008). For additional discussions on this view, see Storr (2009), Langrill and Storr (2012) and Brennan (2016).

reciprocity, are likely to play in successful market exchanges. Section 5 explores the notion that injecting market values into social relationships is necessarily damaging to those relationships and argues, as has been suggested elsewhere, that the market is a social space where meaningful social bonds can and do develop. Section 6 offers concluding remarks.

## *2. The market's moral limits*

Michael Sandel has argued that markets undermine morality and, in particular, worries about the recent expansion of markets and market values (Sandel 2012, 7).<sup>4</sup> Although he believes that an increase in greed has undoubtedly accompanied this “market triumphalism,” the most worrisome consequences of this growth of markets has been “the expansion of markets, and of market values, into spheres of life where they don’t belong” (Ibid., 7). There are perverse moral consequences, he argues, associated with our moving to a world “where everything is up for sale.” Specifically, as Sandel (Ibid., 64) explains, “markets leave their mark on social norms. Often, market incentives erode or

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<sup>4</sup> Sandel’s view is not all that different than the arguments advanced by Alasdair McIntyre (2007): “the tradition of virtues is at variance with central features of the modern economic order and more especially its individualism, its acquisitiveness, and its elevation of the market to a central social place” (Ibid., 254). McIntyre worries that the profit motive and competition, both essential elements of the market, undermine virtue.

crowd out nonmarket incentives." Moreover, Sandel argues that markets in certain goods and services under certain scenarios are likely to be unfair and corrupting.

As Sandel explains, "the fairness objection points to the injustice that can arise when people buy and sell things under conditions of inequality or dire economic necessity" (Ibid., 111). This suggests that market exchanges are not always fully voluntary and that desperation can force people to buy or sell goods and services that otherwise they would not buy or sell if they were in less dire economic circumstances. "Market choices," Sandel (Ibid., 112) explains, "are not free choices if some people are desperately poor or lack the ability to bargain on fair terms. So in order to know whether a market choice is a free choice, we have to ask what inequalities in the background conditions of society undermine meaningful consent." Think here of the child forced to work in a sweatshop, the woman forced into prostitution, and the man forced to sell an organ, because each is extremely poor; think also of the indigenous producer of some export commodity in the developing world who is not able to bargain for fairer terms for her product when transacting with her certainly richer and potentially more sophisticated trading partners in the developed world. As Sandel (Ibid., 111) explains, "a peasant may agree to sell his kidney or cornea to feed his starving family, but his agreement may not really be voluntary. He may be unfairly coerced, in effect, by the necessities of his situation."

In addition to his fairness concerns, Sandel (Ibid.) also worries that market relationships can be corrupting in some circumstances, an objection that "points to the degrading

effect of market valuation and exchange on certain goods and practices. According to this objection, certain moral and civic goods are diminished or corrupted if bought and sold.” This suggests that giving away certain goods and services can be morally neutral or even virtuous while exchanging the same goods and services for money can be morally problematic. This also suggests that introducing money into certain relationships can pervert or poison those relationships. Think here of the monetization of certain activities, like sex in the case of prostitution, which many view as being inherently degrading to both the buyer and the seller. Think also of the sister who charges her brother for doing a favor and the attempt to buy a friendship rather than earning it; both types of relationships, according to Sandel, would be damaged by the introduction of market dealings. He also mentions the selling of blood, which he claims ends up reducing rather than increasing the availability of blood relative to the current system that relies on donations.

Sandel, thus, suggests that certain transactions are likely to be unfair or corrupting because of either the nature of the goods being exchanged or the relationships between the parties to the deal. In a sense, Sandel’s claims are not controversial. Going where you do not belong is bound to have perverse consequences or at least unfortunate or unhappy consequences. There are, however, reasons to worry about his claims. For instance, whether or not Sandel draws the line correctly around where the market should and should not go remains an unsettled question. Moreover, his rationale for



drawing the boundaries where he does draw them is arbitrary at best and appears to be based on tradition or his subjective perception that certain goods ought to be widely available and that certain goods should not be for sale.

However, even if we were to accept Sandel's claims, several key questions remain unanswered. First, what is the moral character of market transactions and values when they occur in spheres where, in his perspective, they *do* belong—that is, where the exchange is truly voluntary and the good is not corrupted by being sold? Are market transactions involving the appropriate goods or the injection of market values between appropriate parties also likely to be unjust and corrupting? Second, are injustice and corruption the only possible, likely, or even dominant morally relevant outcomes of transacting in goods that “should not be traded” and of transactions between individuals who “should not trade” with one another? Is it possible that engaging in market activity and adopting market values can be virtuous even when they occur where and when they should not occur?

The next section attempts to answer these questions, albeit indirectly. Markets, we argue, depend on, as well as engender, trust and trustworthiness, and fairness and reciprocity. Absent trust and trustworthiness, market transactions can become prohibitively costly, and absent fairness and reciprocity, market transactions can become prohibitively uninviting. Moreover, rather than corrupting social bonds, markets benefit from and can encourage the emergence of meaningful social friendships.

### *3. Trust and trustworthiness in market dealings*

By trust we mean the belief that others will not betray us and might even act beneficently towards us in uncertain or risky situations when they are not required to do so and when it is not in their short-term interest to do so (Foddy and Yamagishi 2009). To be trustworthy is to prove deserving of trust by keeping your promises and not betraying confidences or commitments. There is a great deal of research that speaks to the important roles that trust and trustworthiness play in economic activity as well as how economic activity can engender trust and trustworthiness.

Economic agents are said to have either game-theoretic or preference-based reasons to trust (in any context). The former equates trust with an individual's prior belief that his opponent will act cooperatively in a repeated game. The latter motivation (that is, preference-based reasons) presupposes that individuals have preferences for fairness and cooperation. Here, individuals trust anonymous partners even in one-shot games because they expect the same behavior from them. Together, they suggest that markets depend on and engender trust.

The idea that markets depend on trust is not new. As Arrow explained, "virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time. It can be plausibly argued that much of the economic backwardness in the world can be explained by the lack of mutual confidence" (Arrow 1972, 357). Studies of prosperous societies highlight the pivotal role of trust in economic

performance (Putnam 1993; Fukuyama 1995; Keefer and Knack 1997; Zak and Knack 2001). For example, La Porta et al. (1997) showed that the proportion of trusting people was negatively correlated with inflation rates and positively correlated with GDP growth across countries. Zak and Knack (2001) found the positive correlation between generalized trust, GDP growth and investment levels. Dyer and Chu (2003) examined whether trust generates economic value and found that the level of supplier trust in a buyer was correlated with greater (confidential) information-sharing between the exchange partners and also resulted in lower (ex post) transaction costs (such as monitoring costs) and substantively better financial performance. Guiso, Sapienza and Zingales (2009) discovered that greater bilateral trust between two countries is associated with higher volumes of trade between the countries. Zaheer et al. (1988) investigated how firm performance is influenced by interpersonal and inter-organizational trust and found that negotiation costs were a function of interpersonal and inter-organizational trust: where interpersonal trust between employees of partner firms was low, inter-organizational trust remained high (low) and accounted for the low negotiation costs. Furthermore, higher trust societies are also associated with other factors that influence economic success like less crime (Wilson 1987), efficient judicial systems (Berggren and Jordahl 2006), high quality government bureaucracies (Putnam 1993), less government intervention (Aghion et al. 2010), as well as less corruption and better financial markets (La Porta et al. 1997; Guiso, Sapienza and Zingales 2004).

Trust matters in a market setting for two main reasons. First, as suggested above, trust has the propensity to lower transaction costs since it can complement and substitute for contractual and bureaucratic mechanisms for cooperation (Gambetta 1998). Firms often devote a large amount of resources while engaging in expensive negotiations before entering business together to screen for unreliable or untrustworthy partners (that is, ex ante and ex post opportunism) (Spence 1973; Williamson 1975; Farmer and Horowitz 2004). Vetting all possible partners each time an individual wishes to engage in trade is costly, however, and conducting business with traders with good reputations (or with whom others have had “good” personal experience) can reduce the uncertainty arising from the risk inherent to the reliability of partners. As such, individuals have incentives to build lasting relationships with trustworthy others. In addition, there are added benefits to forming such relationships. For example, two trusted partners may not need written contracts and, even when there is one, may not need to stipulate every possible contingency. Furthermore, citizens in high-trust societies are less likely to devote a large amount of resources to protect themselves from violations of their property rights or criminal acts, whether they are in the form of private security or bribes.

Second, trust can inspire not only information-sharing between trading partners (and even competitors) but also confidence in the information that is shared. Through information-sharing, trust can shift focus from short-term returns to long-term returns and thereby encourage investment (in physical and human capital), innovation and

specialization. Moreover, entrepreneurs would have more time to engage in ventures and streamline existing processes if they could spend fewer resources on monitoring potential wrongdoings by partners and their employees because they trust them. Additionally, trust can promote greater efficiency by enabling each party to be more flexible in responding to changing market conditions and in reaching a mutually beneficial solution; after all, individuals can be assured that their partners would reciprocate in the future if they compromise first (Walton and McKersie 1965; Dore 1983; Dyer and Chu 2003).

Markets not only depend on trust and trustworthiness but also promote them. As Granovetter (1985, 490) notes, “individuals with whom one has a continuing relationship have an economic motivation to be trustworthy.” Several studies, for instance, have suggested that the greater the individuals’ exposure to markets, the more likely they are to be trusting and trustworthy. One implication of these studies is that commercial activities—including labor market participation—train individuals to trust and to act trustworthily. Henrich et al. (2004, 2005), for instance, concluded that market integration explains a large portion of the behavior variation across societies that are observed in economic experiments. The more the market is integrated into a community the higher levels of prosociality they exhibit in ultimatum games. Tracer (2004) also found that there was some (albeit weak) support for the notion that a greater level of market integration at both the community and individual level leads to greater

prosociality. Ensminger (2004) found that exposure to markets was a predictor of offer size within ultimatum and dictator games. Tu and Bulte (2010) explored the links between trust and market integration and concluded that trust (as measured using a trust game) is positively associated with labor market participation. Fehr and List (2004) observed a significantly higher display of trust and trustworthiness by coffee mill executives than students in their experiment in Costa Rica. Using a market-priming task followed by a trust game, Al-Ubaydli et al. (2013) concluded that market priming (encouraging subjects to adopt a market mindset) significantly increased levels of trust and trustworthiness. Finally, Choi and Storr (2015a) found that individuals develop relationships characterized by trust and trustworthiness in market settings.

#### *4. Fairness and reciprocity in markets*

By fairness we mean not only impartiality and equanimity but also treating others in a manner that is consistent with how they “deserve” to be treated. To treat someone fairly is, thus, to treat them justly. The existing empirical and experimental research suggests that fairness concerns shape market activity and that, in turn, market activity promotes and encourages people to be concerned with fairness. This should not be surprising, for (at least) two reasons. First, the most profitable businesses are those that are able to develop relationships with trading partners and so encourage repeat business with customers and suppliers. Because people are likely to avoid dealing with those that they

believe have treated them unfairly (so long as alternatives exist), businesses have an incentive to deal fairly with their trading partners. Second, it has been well established that norms (regardless of their content) color economic behavior. We should, therefore, expect market activity and outcomes to be impacted by fairness concerns to the extent that norms of fairness exist within a particular culture.

Concerns about fairness can have an impact on market competition, cooperation, and incentives (Fehr and Fischbacher 2002). Ample empirical evidence suggests that fairness motivates firm and individual behavior. Kahneman, Knetsch and Thaler (1986), for instance, reported that the public has strong feelings about what constitutes a fair price (set by firms), about firms adjusting their prices in the short-run in response to changing market circumstances, and about firms exploiting their market power (in particular, monopoly status). Franciosi et al. (1995) have suggested that buyers who expect to be treated fairly believe that prices should only rise when a seller's production costs rise. Sellers who accept this fairness norm will not raise prices in the short-run unless the price rise can be justified by an increase in their production cost.

Likewise, employees' perception of fair wage constrains the firms' ability to freely set its wages and their willingness to lower them when market conditions decline (Blinder and Choi 1990; Argell and Lundborg 1995). Bewley (1995) explained that persistent downward wage rigidity for both existing and new employees during recessions was the result of employers' beliefs about employee motivation and morale. Specifically,

data collected from interviews suggested that employers want employees to identify with their companies and their objectives and to encourage positive cooperation with their colleagues and supervisors. Refusing to cut wages is not only consistent with the practice of rewarding good performance but also with keeping good worker morale and with maintaining social cohesion and productivity within the firm.

Additionally, experimental research based on a simple bilateral bargaining game called the ultimatum game also illustrate that a non-trivial number of participants do not care solely about monetary payoffs. In this game, the first mover is asked to divide a given monetary endowment between himself and the second mover, who has the right to take or reject the division. If the division is rejected, both players earn nothing. Game-theoretic predictions dictate that the self-interested first mover should offer as little as possible to the second mover, who, likewise, should accept even the minimum amount offered. This asymmetric division, however, tends to appear unfair to many people, and dozens of replications of ultimatum games support this view. Typically, first movers offer an average of 40 percent of the endowment to second movers and second movers frequently reject offers of less than 20 percent. This general observation holds even at higher stakes of \$100 and \$400 (Hoffman, McCabe and Smith 1996; List and Cherry 2000). One interpretation of second mover rejections is that some players respond to unfair treatment with negative reciprocity (that is, by harming the person who treated them unfairly even at their own expense). Undoubtedly, negative reciprocity can be



observed in social settings (such as ugly friendship breaks and divorces) as well as economic settings (such as boycotts).

Dozens of ultimatum games from around the world corroborate the general observations from the small-stakes games conducted in the United States. Cross-cultural comparisons of behavior in ultimatum games revealed similarities in offer distributions and acceptance rates between student populations in America, Japan, Slovenia, and Israel (Roth et al. 1991). These cross-cultural similarities suggest that an “overwhelming market influence [may be dominating] any cross-cultural notions of fairness or norms of exchange” (Gurven 2004, 195). Supporting this view, Henrich et al. (2010) concluded that the levels of market integration and fairness—even in brief, one-shot exchanges—are positively correlated, based on data collected from basic experimental games (including the ultimatum game) administered over fifteen distinct small-scale societies.

##### *5. The sociality of commercial exchanges*

Zelizer (2011) has criticized what she describes as the “separate spheres” and “hostile worlds” views of the relationship between economy and society. The separate spheres view holds that the two arenas of social life, one characterized by sentiment and mutuality and the other characterized by rationality and exchange, can co-exist peaceably alongside one another. The “hostile worlds” view, however, suggests that

these two spheres inevitably “contaminate” each other if and when they intersect: “penetration of rational calculation into the sphere of sentiment would disrupt solidarity, just as the penetration of sentiment into the sphere of rationality would disrupt [rational] efficiency”(Ibid., 5).

Interestingly, Hayek (1988, 18) seemed to endorse the “hostile worlds” view, writing that

we must constantly adjust our lives, our thoughts and our emotions, in order to live simultaneously within different kinds of orders according to different rules. If we were to apply the unmodified, uncurbed, rules of the micro-cosmos (i.e., of the small band or troop, or of, say, our families) to the macro-cosmos (our wider civilisation), as our instincts and sentimental yearnings often make us wish to do, we would destroy it. Yet if we were always to apply the rules of the extended order to our more intimate groupings, we would crush them.

Zelizer (2011, 387) has rejected this style of thinking in favor of “a more fully social conception of economic activity.” The dichotomy between the world of the family and the world of the firm, she suggests, is a false one.

It is possible for social relationships to survive contact with the market without being corrupted. In fact, as suggested above, social relationships can facilitate economic

activity. Stated another way, economic activity is embedded within a context of ongoing social relations and individuals can utilize their social connections as they pursue their economic goals. Additionally, it is possible for social relationships to develop within market contexts and for commercial relationships to develop into social friendships. Indeed, the market is a social space where meaningful social connections do occur and meaningful social bonds do deepen. Even if Sandel is correct that the introduction of market values do sometimes and under certain circumstances corrupt social bonds, it does not appear to be the case that the introduction of market values *necessarily* corrupts social bonds. Moreover, there appears to be the potential that market activity can be enhanced by social relationships and that social relationships can be deepened by market activity.

### *5.1. The concepts of embeddedness and social capital*

“Actors,” Granovetter (1985, 487) writes, “do not behave or decide to behave as atoms outside of social structure, nor do they adhere slavishly to a script written for them by the particular intersection of social categories that they happen to occupy.” Instead, economic action is embedded within social structures. Specifically, he argues that concrete relationships reduce transaction costs by engendering trust and reducing the likelihood of malfeasance (Ibid., 490). Elsewhere, Granovetter (1983) has likewise discussed the persistence of large family firms and ethnic trade groups in advanced

economies. More recently, he has pointed out that social structures can affect and influence a variety of economic phenomena including prices, productivity and innovation (Granovetter 2005).

Others have profitably employed the concept of embeddedness to explain how social structure affects economic activity.<sup>5</sup> Uzzi and Lancaster (2004), for instance, have discussed how firms' embedded relationships can affect the prices of both standard and complex legal services. Similarly, Uzzi (1996) has argued that firms are embedded in organizational networks that can both promote and retard economic performance. Romo and Schwartz (1995) have made the case that the market and non-market relationships that develop within regional economies eventually create dependencies that work to constrain the migration of manufacturing firms out of the region, even when migration would result in monetary savings.

The social capital literature has, similarly, discussed how individuals utilize their social relationships as they pursue their economic goals. Coleman (1988b, S98), for instance, has explained that "social capital is productive, making possible the achievement of certain ends that in its absence would not be possible." Like other forms of capital, it is a tool that is heterogeneous, with some social capital better suited for some purposes, and some better suited for other purposes (Coleman 1988b; Chamlee-Wright 2008). Social

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<sup>5</sup> See Krippner and Alvarez (2007) for a discussion of the research that applied and extended the concept of embeddedness.

capital, Coleman (1988b, S98) explains, exists within and is inextricable from “the structure of relations between and among actors” and comes in several different forms, including mutual trust, information channels, norms, and effective sanctions (Ibid., S101). For instance, as he describes, social ties between Jewish diamond traders in New York act as a kind of insurance, eliminating the need for purchasing expensive insurance devices, lowering transaction costs, and therefore facilitating transactions that would not otherwise be possible. Similarly, social capital within the family and within the community can act as a resource that facilitates the attainment of human capital by children. The closer the relationships between parents and children and the closer knit the community to which they belong, he concludes, the less likely it is that these children will drop out of school.

Others have used the concept of social capital to explain how individuals deploy their social networks and the resources embedded within their social networks as they pursue their economic goals. Granovetter (1973, 1983), for instance, has described how individuals rely on weak ties in order to secure employment. (Also see Mouw 2003.) Podolny and Baron (1997) have described how peoples’ informal ties within an organization affect their advancement. Uzzi (1999) has found that social relationships between corporate bankers and borrowers can lower loan prices by facilitating the flow of information and the establishment of informal enforcement mechanisms. Torsvik (2000) has likewise found that social capital as social norms reduces transaction costs in

the economic sphere and, so, promotes social cooperation. Also, Keefer and Knack (1997) found that economic performance and social capital in the form of norms of civic cooperation and interpersonal trust are positively related.

Although there is some discussion in the literature on the possible costs associated with belonging to particular networks (e.g. Uzzi 1996; Rubio 1997; Woolcock 1998; Portes 2000), most studies tend to focus on how social relationships, and the resources that individuals can access through their social networks, affect economic performance. Moreover, when they do discuss the formation of social relationships within the economic sphere, scholars tend to focus on the formation of weak ties within commercial organizations and not on the possibility that strong ties can and do develop within commercial places.<sup>6</sup>

### *5.2. Social relations as economically conditioned*

Even though studies within the embeddedness literature tend to focus on how these relationships affect individual or organizational economic performance, some point to the possibility of social bonds developing between participants in a market setting.

While Ingram and Roberts (2000), for instance, focus on the economic function of the relationships that can develop between competitors, they nonetheless acknowledge the

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<sup>6</sup> For more on social capital and virtue, Rose (2016).

possibility that these relationships can form. Similarly, Granovetter (1985, 495) is aware that social action can be economically conditioned: as he acknowledges, “business dealings [sometimes] spill over into sociability ... especially amongst business elites.” Additionally, in explaining why consumers tend to trust and prefer “our own past dealings” as sources of information, Granovetter (Ibid., 490) notes “continuing economic relations often become overlaid with social content that carries strong expectations of trust and abstention from opportunism.” Although he stops there and does not tease out the implications of his observation that social feelings often grow out of commercial relationships, the observation that market relations often develop into relationships characterized by trust is important in itself.

Indeed, as Adam Smith (1982b, 223-224) argued, “the necessity or convenience of mutual accommodation very frequently produces a friendship not unlike that which takes place among those who are born to live in the same family. Colleagues in office, partners in trade, call one another brothers; and frequently feel towards one another as if they really were so.” More generally, as Silver (1990) discussed, commercial society can actually promote meaningful social connections. Seabright (2010, 12) has pointed out that markets work because human beings in market contexts and governed by market institutions are “willing to treat strangers as honorary friends.” As Storr (2009, 143) observed, markets can be social spaces “where both economic and extraeconomic relationships are developed and maintained.” By extraeconomic relationships, Storr is

referring to social relationships that begin as economic or commercial relationships (that is, relationships between co-workers, employers and employees, mentors and apprentices, and so on) that morph into genuine social friendships characterized by deep bonds of trust and affection. As he continues, “markets are not only embedded in the community but can also promote and sustain the community. ... Many meaningful conversations beyond negotiations occur within the conversation of the market” (Ibid.).

There are a few studies within the industrial sociological and management studies literature that speak to the potential of commercial relationships to morph into social friendships as well as the potential benefits and negative aspects of deep commercial friendships. For instance, many have described how strong bonds develop between workplace friends because of their common experiences and circumstances (e.g. Argyle and Henderson 1985; Zavella 1985; Bridge and Baxter 1992; Hodson 1997). Think of co-workers on the factory floor who invite each other over for barbeques on the weekends, or office workers who reconvene after work for happy hour before heading home. These relationships, it turns out, are not only important for job satisfaction but can also represent deep social bonds. Similarly, other studies have discussed how workplaces can facilitate office romance because co-workers often have similar backgrounds and so much time is spent at work associating with colleagues (Pierce et al. 1996; Williams et al. 1999). Also, as yet others describe, even principal–client and seller–buyer relationships can develop into close friendships (Price and Arnould 1999; Haytko 2004). Again, the



trust that is necessary for their work relationships to function well and the trust fostered during their non-work interactions can reinforce one another. As Price and Arnould (1999, 50) found, “commercial friendships, similar to other friendships, involve affection, intimacy, social support, loyalty and reciprocal gift giving.”

Admittedly, these commercial relationships may not be as deep as the social bonds that develop in other contexts. The social unions between neighbors, schoolmates, church members, or lodge brothers may very well be closer, by their very nature, than workplace friendships.<sup>7</sup> And, of course, family ties may trump any relationship that might ever develop in the workplace. The point in highlighting these relationships is not to privilege them over non-commercial friendships but merely to suggest that these relationships can play important roles in people’s lives.

In addition to being spaces where commercial friendships are formed, businesses also provide spaces where non-commercial relationships grow and develop. Amongst the range of goods and services that businesses provide, one key and easily overlooked one is the provision of environments where social bonds that developed in, say, the synagogue, church, university, or the neighborhood playground, can be cemented. That two friends can spend a Saturday afternoon at the mall, that a family can share a meal on Sunday night at their favorite restaurant, that friends at different firms can find

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<sup>7</sup> Yet these non-commercial relationships, when soured, could be more malicious and vindictive than commercial relationships. We often hear of irreconcilable family feuds, ugly divorces, vindictive ex-best friends, and ostracism of former members of religious groups.

places to meet for lunch in the middle of a busy work day, that a couple can go out to dinner, dancing and a movie on a Friday night, are important aspects of what businesses provide in addition to goods and services. To be sure, friends, couples, and family members found spaces for conviviality before there were restaurants and shopping malls. Indeed, homes, churches, parks, and museums remain important social spaces. The point is simply to emphasize that market spaces can serve a similar function.

## 6. Conclusion

There has been a long-standing debate around the sociality and morality of markets. On the one hand, markets are said to be socially and morally problematic. Market dealings are said to be inherently unfair and potentially corrupting. On the other hand, markets are said to have an ameliorative effect. Commerce, it is argued, engenders gentle manners (Montesquieu 1961; Hirschman 1977),<sup>8</sup> cordializes mankind (Paine 1984), and enhances virtues (Smith 1982b; Paganelli 2010). This chapter attempted to indirectly engage this debate by discussing how trust, reciprocity, and friendships are affected by market dealings. Specifically, we argued that markets engender trust and trustworthiness as well as fairness and reciprocity. Moreover, we argued that the market is a social space where meaningful social relationships characterized by truth and

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<sup>8</sup> This is commonly referred to as the *doux commerce* thesis.

reciprocity can and do develop. Rather than trustworthiness, fairness, and friendships being put at risk when individuals engage in market activity, the market crucially depends on and actively encourages their development.

## 2. THE EMERGENCE OF SOCIAL RELATIONSHIPS IN MARKETS: AN EXPERIMENTAL ANALYSIS<sup>1</sup>

### *1. Introduction*

Scholars in several disciplines have stressed the extent to which markets are embedded in networks of social relationships and the degree to which social norms can shape market outcomes (e.g. Granovetter 1973, 1983; Baum and Oliver 1992; Portes and Sensenbrenner 1993; Romo and Schwartz 1995; Uzzi 1996; Foley and Edwards 1999; Portes 2000; Adler and Kwon 2002; Rizza 2006; Ghezzi and Mingione 2007). Granovetter (1973) and Coleman (1988a), for instance, have discussed how individuals use their social connections as they pursue their economic goals. Torsvik (2000) has likewise argued that social norms can reduce transaction costs in the economic sphere and, so, promote social cooperation.<sup>2</sup> Moreover, trust has been regarded as a key ingredient of almost all social interactions including commercial transactions (Misztal 1996).

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<sup>1</sup> This chapter is co-authored with Virgil Henry Storr.

<sup>2</sup> Conversely, Portes and Landolt (1996) and Annen (2001) have highlighted how social networks might impede economic performance.

Here, we define trust as the belief that others will not harm us and might even act honorably towards us in uncertain or risky situations when they are not required to do so and when it is not in their short-term interest to do so (Foddy and Yamagishi 2009). Trust is widely accepted as being essential to the development of a successful market economy. It has been demonstrated that social capital in the form of civic cooperation norms and interpersonal trust has favorable impact on economic performance (e.g. Banfield 1958; Putnam 1993; Fukuyama 1995; Keefer and Knack 1997; La Porta et al. 1997; Zak and Knack 2001; Friedman and McNeill 2013). Mutual trust between countries can increase bilateral trade and direct investment (Guiso, Sapienza and Zingales 2009). Furthermore, recent studies have shown that higher levels of trust are associated with higher economic growth (e.g. Tabellini 2008; Algan and Cahuc 2010) and that members of high trust societies tend to be more cooperative (e.g. Hermann et al. 2008; Johnson and Mislin 2011). Additionally, many empirical studies show that social norms like generalized trust can play a powerful role in constraining the interactions of group members (e.g. Conlin, Lynn and O'Donoghue 2003; Shang and Croson 2006; Bicchieri and Xiao 2009), increasing overall cooperation (e.g. Andreoni 1995; Gächter and Fehr 1999; Fischbacher et al. 2001; Henrich et al. 2001; Fehr and Fischbacher 2004a, 2004b; Bicchieri 2006) and solving coordination problems (e.g. Mehta, Starmer and Sugden 1994; Sugden 1995; Krupka and Weber 2009).

Although the literature has stressed on how (strong and weak) social ties as well as trust facilitate market activity, there have been several studies that explore how engaging in market activity affects social bonds.<sup>3</sup> There is, of course, the long-standing debate around the *doux commerce* thesis.<sup>4</sup> Additionally, Granovetter (1985) has suggested that it is common for economic relationships to become overlaid with social content. Anderson (2003) and Duneier (1994) have described how commercial spaces like restaurants and bars serve as important gathering spots for the residents of urban areas. Zelizer (2005) also discussed the connection between economy and intimacy. Likewise, Storr (2008) has argued that markets are social spaces and that it is possible for commercial relationships to develop into meaningful social friendships. Moreover, there have been several studies that have looked at workplace romances (e.g. Williams et al. 1999; Pierce et al. 1996), co-

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<sup>3</sup> It is quite common for non-economists and non-sociologists to discuss how social relationships are affected by market activity (see, for instance, Putnam 2000; Gudeman 2001). These efforts often conclude that markets have a detrimental effect on social bonds. See, however, the explorations of relational work within economic sociology for an important alternative. These studies point out that there is not and arguably has never been a real schism between our social and economic lives. See Zelizer (2005, 2012) and Bandejl (2012) for helpful discussions of this concept. This paper can be read as exploring the process of relational work.

<sup>4</sup> The long-standing debate around the morality of markets has indirectly provide some insight into the relationship between markets and sociality generally and the relationship between markets and trust specifically. On the one hand, it has been argued markets can destroy individual judgment and conduct (e.g. Falk and Szech 2013), weaken societal and corporate morality (e.g. Shleifer 2004), hurt altruism and cooperation (e.g. Bowles 1998) and have unintended adverse consequences on social norms and informal institutions (e.g. Frey and Oberholzer-Gee 1997; Deci, Koestner and Ryan 1999; Falk and Kosfel 2006; Sandel 2012). On the other hand, markets are said to have an ameliorative effect. Commerce, it is argued, engenders gentle manners (i.e. *doux commerce* thesis) (Montesquieu 1961; Hirschman 1977), cordializes mankind (Paine 1984) and enhances virtues (Smith 1982, Paganelli 2010). More recently, Seabright (2010: 12) has pointed out that markets work because human beings in market contexts and governed by market institutions are “willing to treat strangers as honorary friends.”

worker friendships (e.g. Henderson and Argyle 1985; Zavella 1985; Bridge and Baxter 1992; Hodson 1997) as well as mentor-mentee (e.g. Burke 1984), principal-agent and seller-buyer relationships (e.g. Price and Arnould 1999; Butcher et al. 2002; Haytko 2004).

There is a growing literature within experimental economics on how market exposure affects levels of trust within communities. Henrich et al. (2010), for instance, has found that exposure to the market increases other-regarding preferences. Similarly, Tu and Bulte (2010) found that trust is positively associated with market integration. And, Al-Ubaydli et al. (2013) has shown that priming subjects to think about markets can actually increase trust.

Still, the impact that commercial dealings can have on social relationships has been generally understudied. Specifically, the literature has not explicitly explored whether and how social bonds characterized by trust and reciprocity can be established through market dealings and if these relationships can affect subsequent behavior in non-market settings. This paper addresses this gap in the literature and investigates how market experience affects social dyadic relationships.<sup>5</sup> We use a two-task experimental design where subjects are placed in a market setting (where several features of real world

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<sup>5</sup> Although we focus on the causal relationship from market activities to social relations here, the reverse is equally universal and true, to which many studies already speak. Our purpose in this paper is to highlight the important, but underexplored, market-activities-to-social-relations causal direction.

markets are retained but where defection rates are expected to be high) and then a trust setting (where key information about their former trading partners is retained). The first stage involves a modified Chamberlin market and the second stage involves the standard trust game developed by Berg, Dickhaut and McCabe (1995) (henceforth, BDM 1995). Our main result is that relationships characterized by successful market trades (henceforth positive relationships) display significantly higher levels of trust and trustworthiness compared to those relationships characterized by defected market trades (henceforth negative relationships).<sup>6</sup>

The paper is structured as follows. The following section discusses the relevant literature and presents a detailed background on key previous experimental studies. Section 3 then explains our laboratory design and hypotheses. Section 4 presents our main results and Section 5 offers concluding remarks.

## *2. Market-generated trust*

This paper contributes to (a) the literature on markets and social relationships as well as (b) the experimental literature on the effect of market settings on interpersonal trust.

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<sup>6</sup> In experimental economics, trustworthiness is popularly viewed to be essentially the same as reciprocity (e.g. Croson and Buchan 1999; Ostrom and Walker 2003). Although some have challenged this view (e.g. Kramer 1999; Dufwenberg and Gneezy 2000; Cox 2004), we will follow the popular view in this paper and interchangeably use trustworthiness and reciprocity.



### *2.1. Markets and the development of social relationships*

There appears to be a weak consensus that social bonds can, at least occasionally, develop in markets. However, there does not appear to be a consensus concerning the quality of these commercial friendships. Moreover, there is wide disagreement concerning whether or not markets are more likely to promote or disrupt social bonds.

This ambiguity over the quality of the social bonds that develop between market actors and the likelihood that these social bonds will emerge has arguably always characterized discussions surrounding the connection between markets and sociability. Smith (1982b), for instance, believed that markets have the potential to both disrupt and enhance social bonds. Specifically, he argued that the growth of markets led to a weakening of familial bonds while at the same time creating an opportunity for the development of deep social connections between co-workers (*ibid.*: 223-224). Others have, of course, taken a less ambiguous view of the affect that markets have on social relationships. Marx (1844, 1937, 1975), Polanyi (1957, 1979) and Weber (1978), for example, all believed that social and market relations were necessarily at odds and that the expansion of market activity (if unchecked) would have a deleterious effect on community.

More recently, Granovetter (1985) has argued that social action can be economically conditioned and that market activity can lead to the development of meaningful social connections. As Granovetter (*ibid.*: 495- 496) acknowledged “[t]hat business relations

spill over into sociability and vice versa, especially among the business elites, is one of the best-documented facts in the sociological study of business.” Furthermore, in explaining why consumers tend to trust and prefer their “own past dealings” as sources of information, Granovetter (ibid.: 490) noted that “individuals with whom one has a continuing relationship have an economic motivation to be trustworthy” and “continuing economic relations often become overlaid with social content that carries strong expectations of trust and abstention from opportunism.” Repeated successful interactions in the market, for Granovetter, not only serve as a foundation for future market transactions but can also be a basis for social friendships.

Likewise, Putnam (2000) has acknowledged that workplace ties can and do develop. Friendships formed at the office, he argued, can be a substitute for friendships developed elsewhere. According to Putnam (2000: 87), “many people form rewarding friendships at work, feel a sense of community among coworkers, and enjoy norms of mutual help and reciprocity on the job.” He, however, did not believe that the possibility of co-workers developing friendships compensates for the loss of social connections that has occurred due to the changes in the nature of work and the technological developments brought by the growth of markets. According to Putnam (ibid.), there is “no evidence whatever that socializing in the workplace, however common, has actually increased over the last several decades.” Additionally, Putnam (ibid.) insisted that social

connections formed in the workplace are inferior to connections formed in other settings and that they “tend to be casual and enjoyable, but not intimate and deeply supportive.”

Elsewhere, Storr (2008) has argued that the market is a social space where meaningful conversations beyond bid-ask take place and where meaningful social relationships beyond exchange and competition occur. A number of studies have demonstrated the variety of social relationships that can emerge in markets. For instance, mentor-mentee relationships frequently develop into close friendships, or even into relationships that display some characteristics typical of parent-child relationships. Kram (1983: 614) suggested that these relationships, typical in several trades and professions, could fulfill a number of “psychosocial functions including role modeling, acceptance-and-confirmation, counseling, and friendship.” Similarly, it is not uncommon for certain seller-customer relationships frequently evolve into deep friendships: for instance, lawyers and their clients, hairdressers, barbers and their customers, and retailers and their shoppers. “Commercial friendships, similar to other friendships,” Price and Arnould (1999: 50) articulated, can “involve affection, intimacy, social support, loyalty, and reciprocal gift giving.” The social relationships that develop between co-workers can, of course, range from acquaintanceships to friendships. According to Henderson and Argyle (1985), work acquaintances are more common than social friendships between coworkers, but friendships with social interactions outside of the workplace do frequently grow between coworkers. Moreover, as Bridge and Baxter (1992: 200) wrote,

“for many adults who work outside the home, friendships frequently evolve from existing role relationships in places of employment and are maintained within those organizational settings.” Berman, West and Richter (2002: 219) have likewise noted, “workplaces often have features that may facilitate friendship making. Workplaces are sites where people meet others, including co-workers, clients, members of other departments or organizations, and supervisors.”

Discussions of relational goods are also relevant here.<sup>7</sup> Relational goods – valuable, intangible goods specific to individual relationships – can only be consumed if certain know others jointly act to acquire it and characterize non-instrumental relationships. Gui (1996), for instance, has argued that the personal encounters that individuals experience in the market are opportunities for the joint production of relational goods with the other parties to the exchange. Mota (2009), however, has asserted that enhanced market competition means less relational goods. Similarly, Becchetti et al. (2008) has suggested that relational goods will tend to be underprovided and under consumed in the market.

Although this literature does acknowledge the potential of commercial relationships to morph into social relationships, it fails to provide a definitive answer to the question as to whether the impact of markets on social relationships will, on net, be positive or

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<sup>7</sup> See, for instance, Uhlaner (1989) and Gui and Sudgen (2005).

negative.<sup>8</sup> Additionally, as discussed in Section 2.2, efforts to explore the link between markets and social relations characterized by interpersonal trust have tended to focus on how markets *depend on*, rather than *generate*, trust.

## *2.2. Experiments on the effect of market settings on interpersonal trust*

There is now a considerable literature within experimental economics on trust and trustworthiness (e.g. Camerer and Weigelt 1988; Fehr, Kirchsteiger and Riedl 1993; BDM 1995) and on its determinants (e.g. Croson and Buchan 1999; Alesina and La Ferrara 2000; Cox 2004; Eckel and Wilson 2004; Sutter and Kocher 2007; Aimone and Houser 2011). The game designed by BDM (1995) is the most popular in this subfield and a consistent finding of the trust literature is that individuals display heterogeneous levels of trust and trustworthiness.<sup>9</sup> Yet, there have been relatively few studies on how engaging in markets impacts measured levels of trust and trustworthiness. This is somewhat surprising given the strong correlation between trust and economic performance (e.g. Zak and Knack 2001; Guiso, Sapienza and Zingales 2009).

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<sup>8</sup> Additionally, the conditions under which commercial dealings are likely to morph into social relations and the conditions under which they will disrupt social bonds remain underexplored. However, we will not explore them here.

<sup>9</sup> See Johnson and Mislin (2011) for a comprehensive overview of the experimental results from trust games conducted around the world.

Existing experimental evidence suggests that markets engender trust and prosociality. Henrich and co-authors, for instance, used standard experimental economic games to demonstrate that a large portion of the observed variation in prosocial behavior across multiple small-scaled societies correlates with a society's level of market exposure and integration (Henrich et al. 2004, 2005, 2010). Ensminger and Cook (2014) reported a rural American population to have displayed the highest level of prosociality, including trust and trustworthiness, of the world sample in this project. Tracer (2004) also found some support for the notion that a greater degree of market integration at the community and individual levels leads to greater prosociality. Likewise, Ensminger (2004) found that exposure to markets predicted offer size within ultimatum and dictator games and Tu and Bulte (2010) concluded that trust (as measured using a trust game) is positively associated with labor market participation. Using a priming task that led subjects to think about markets and trade, Al-Ubaydli et al. (2013) found that merely having positive thoughts about markets and trade could significantly increase the amount sent by the senders to anonymous partners.<sup>10</sup> Additionally, Fehr and List (2004) observed a significantly higher display of trust and trustworthiness by coffee mill CEOs than students in their experiment in Costa Rica. Exploring the endogenous formation of fairness preferences in a market context, Herz and Taubinsky (2014) found that market experience (defined by personal profit experience and observations of market outcomes)

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<sup>10</sup> In addition, Al-Ubaydli et al. (2013) convincingly argued that this increase in sender transfer was a consequence of increased trust rather than increased altruism.

mattered in shaping fairness preferences and that traders who were accustomed to higher (lower) offers regarded high (low) offers as fair. Not all studies, however, conclude that market exposure leads to more trusting and trustworthy behavior in laboratory experiments. Gurven (2004) observed that differential market exposure was not an important influence on the behavior of Tsimane people in ultimatum and public goods games. Similarly, Bowles (1998), Hoffman et al. (1994), Schotter et al. (1996) and Reeson and Tisdell (2010) found that the more aspects of the laboratory experiment resemble a market, the less likely participants were to display other-regarding preferences.

Despite these studies that link market exposure and prosocial attitudes, whether or not markets will tend to promote trust that carries over into non-market settings remains an unsettled question. In order to explore this link, studies incorporated multiple methods (demographic, survey and other data) to determine the degree of market integration or to introduce certain aspects of modern markets (such as anonymity or exchange) into their experimental design. There, thus, remains an opening in the literature to explore the endogenous formation of social bonds characterized by trust and reciprocity in market settings using laboratory experiments. This paper attempts to fill this opening.

### *2.3. Can markets promote trust and reciprocity? If so, how?*

This paper contends that markets are important for the development of meaningful social bonds. Engaging in market transactions gives individuals opportunities not only to form beliefs about each other but also to develop relationships characterized by trust and reciprocity with other market participants, which can then be carried over into non-market settings.

The main hypothesis can, thus, be stated as follows:

H: Individuals who have developed a positive relationship with another in a market setting will exhibit higher levels of trust and reciprocity when interacting with that person outside of a market setting than when interacting with individuals with whom they have developed a negative relationship in a market setting.

For our purposes here, a positive relationship developed in a market setting is one where trading partners kept their commitments with each other more often than not.

There are at least three mechanisms through which markets might promote meaningful social bonds characterized by trust and reciprocity. First, markets might give individuals opportunities to learn about specific others. In particular, individuals can learn whether or not someone is a fair trader and a promise keeper or the reverse. Stated another way, markets give individuals opportunities to reveal themselves to be trustworthy.



Knowledge about the nature of specific trading partners would likely impact future interactions with them both inside and outside the market. Second, markets can enable people to trust strangers. Trust may be habit-forming; routinely trusting family and close friends may unconsciously accustom people to taking chances on unknown others. In this situation, markets may provide the social space where people could indulge their habit en masse.<sup>11</sup> Third, markets might give people opportunities to learn about others in general.<sup>12</sup> As more people have positive experiences in the market, more likely would they be to develop positive relationships with specific others in a market setting and thus more likely they are to trust and to reciprocate the trust of others. In other words, successful transactions in the market might condition individuals to the possibility of mutually beneficial exchanges and, again, promote the development of prosocial attitudes.<sup>13</sup>

A laboratory experiment where individuals engage in a market with the potential of defection followed by a trust game will be able to demonstrate that markets can promote the development of meaningful social bonds characterized by trust and reciprocity. Not only will it provide us the control over relationship formation necessary for our

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<sup>11</sup> Putnam (1995: 169) refers to this as the transitivity of trust. Berggren and Jordahl (2006) discuss the role economic institutions play in the endogenous formation of *generalized* trust in a market economy.

<sup>12</sup> For example, see Fehr and Gächter (2000).

<sup>13</sup> We do not attempt to disentangle these mechanisms in this paper.

purposes, it will also allow us to trace each displayed level of trust to its own specific market experience history.

### *3. Experimental Procedures*

To assess our hypothesis, our experiment uses a two-task design involving eight subjects per session.<sup>14</sup> Subjects performed a modified Chamberlin market (henceforth the trading game) followed by a trust game. All subjects were also asked to perform a Holt and Laury (2002) lottery choice task and to fill out an exit survey at the conclusion of the experiment. The experiment was fully computerized using the z-Tree (Zurich Toolbox for Readymade Economic Experiments) (Fischbacher 2007).

Subjects were recruited via email from a pool of registered students at George Mason University. The experiment was conducted between October 2013 and February 2014. Subjects were seated in individual cubicles and separated by partitions, so that others could not observe their actions. They earned cash from four tasks: the trading game, the trust game, the Holt-Laury lottery choice task and the comprehension quiz for the trading game.

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<sup>14</sup> Hargreaves Heap et al. (2013) employ a similar design but were interested in how knowledge about the other participants in the trust game affected trusting behavior.

In lieu of reading aloud the instructions for the trading game, we provided a verbal executive summary of the game after the students were given a chance to read the first task instructions. We answered any questions pertaining to the game itself before we read aloud the instructions on how to navigate through the computer interface. For all other tasks, instructions were read aloud as soon as they were distributed and the students were given opportunities to ask questions in private afterwards.

### *3.1. Experiment Design*

The first task was the trading game. The trading game consisted of four buyers and four sellers and eleven trading rounds, one of which was a practice round. Each subject was randomly assigned to a market role at the beginning of the task and did not change roles for the duration of the task. At the beginning of each round, each buyer received a budget in experimental dollars (E\$), randomly drawn from a uniform distribution between E\$11 and E\$100 – and each seller received one unit of the good and a fixed cost value of E\$10. No two buyers received the same value within the same round.

The trading game is comprised of two stages. In the first stage, subjects partook in a Chamberlin market which lasted for 2.5 minutes per round and were given the opportunity to engage in bilateral negotiations with anyone in the opposite market role by sending price offers. Each subject selected one specific recipient to whom to send an

offer and proposed a trading price. Buyers were restricted to negotiating and trading with sellers while sellers were restricted to buyers, thus, eliminating opportunities for collusion to arise between sellers or buyers. Upon receiving an offer, the recipient could then accept, reject or ignore the proposed offer and send a counteroffer if desired. (Note that a recipient could receive multiple offers at a time.) Once the recipient accepted an offer, both buyer and seller removed themselves from the market and any active offers that they sent or received automatically expired. We restricted subjects to initiating and maintaining only one active offer at a time. By doing so, not only can we encourage subjects to thoroughly consider to whom to send offers, but we can also prevent them from adopting a strategy where they simply sent all potential trading partners an offer.<sup>15</sup> Every offer was private and known only to the involved buyer and seller. Any subject who did not successfully trade at the end of 2.5 minutes earned E\$0 for that round.

Once the Chamberlin market closed, those who successfully traded entered a second stage where the offer senders were given the option to execute or abandon the trade. If the offer sender chose to execute the trade, the good was exchanged with the offer recipient and both subjects earned round profits (calculated in the standard way) at the end of the round. On the other hand, if the offer sender chose to abandon the trade (i.e. to defect and so default on his agreement), he kept both the good and the cash. In this case, the round profits depended on the player role of the offer sender. If the offer

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<sup>15</sup> Each offer sent by a subject must be accepted or rejected by the recipient before he could send another offer to a different (or the same) recipient.

sender was a seller, he earned the agreed trading price plus E\$10 (the value of the good) while the buyer earned zero. If the offer sender was a buyer, he earned his budget plus E\$10 while the seller earned zero.<sup>16</sup>

The second task is the trust game designed by BDM (1995). The trust game involved two players – a sender and a responder. At the beginning of the game, both players received an initial endowment of 10 tokens. While the responder pocketed his endowment, the sender decided how much of his 10 tokens he wished to send to the responder (denoted as  $x$ ). The experimenter tripled the sender's transfer and informed the responder of the tripled amount. The responder then made a decision on how much of this tripled amount to send back to the sender (denoted as  $y$ ). A sender's earnings from a trust game are calculated as  $(10 - x + y)$  while a responder's earnings are calculated as  $(10 + 3x - y)$ . Subjects were randomly assigned to a player role at the beginning of the second task and kept this role throughout the task. Each subject was paired with everyone who had the opposite market role and played a trust game with each of the four subjects in the

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<sup>16</sup> We purposefully designed the trading game with this payoff structure for three reasons. First, providing monetary compensation for the good when an offer sender defects ensured that defection was profitable. Second, subjects incurred sizeable cost for dealing with untrustworthy partners and for returning to partners who have previously defected on them. Third, we hoped it would heighten the sense of betrayal that subjects would feel when their trading partner defected. As such, we consider our environment to be somewhat nonconductive to the development of positive relationships characterized by trust and reciprocity in our trading game than in actual markets. Our results suggest that positive relationships were indeed more difficult to form in our trading game.

opposite market role. Subjects simultaneously made transfer decisions for these four games.<sup>17</sup>

As part of the exit survey, subjects performed Holt and Laury's (2002) low stake risk aversion task; the safe lottery was a compound lottery between \$2 and \$1.6 and the risky lottery was a compound lottery between \$3.85 and \$0.10.<sup>18</sup>

At the end of the experiment, subjects privately rolled 10-sided and 4-sided dice to randomly select a trading round from the first task, a partner from the second task and a decision from the risk task for their final cash payment. Earnings from the first (second) task were converted into cash using the exchange rate of US \$1 to E\$2.5 (3 tokens). Earnings from the Holt-Laury task was rounded up to the near dollar, which was announced privately to each subject once he completed his dice rolls.

A few of design features are worth noting. First, we have chosen the Chamberlain market rather than another experimental market because a key feature of the Chamberlin market is that it allows subjects to discriminate and choose between potential trading partners. Specifically, a buyer (seller) could choose and privately

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<sup>17</sup> We opted to have subjects play trust games with all possible trading partners, as opposed to one randomly chosen trading partner, to guarantee that we gathered observations on an individual's trusting or trust-reciprocating behavior with known others. Since our market environment does not limit subjects from trading with one specific individual throughout the first task, we could have potentially lost valuable observations if we were to match each subject with a subset of the available and eligible partners.

<sup>18</sup> Refer to Appendices B and C for the instructions and the exit survey distributed to the subjects for this experiment.

negotiate with a specific seller (buyer) with whom he wished to trade. Consequently, we considered the Chamberlain market to be better suited for our purposes. Second, instead of assigning the subjects experimental ID numbers, we assigned experimental aliases, which consisted of the ten of the most popular male names in America in 1990.<sup>19</sup> Across social settings, people communicate and socialize with each other using names and associate personal histories, experiences and sentiments to individuals. In order to simplify the process in which subjects form and attach sentiments and an interaction history to other subjects, we chose to use names throughout our experiment. Subjects are aware to (from) whom they send (receive) offers in the first task and are aware with whom each game was played in the second task.<sup>20</sup> Third, it is necessary for our subjects to accurately recall their market histories with each specific trading partner during the trust games. At the beginning of each task, we provided the subjects with record sheets on which to write their partners' aliases and round profits (token earnings) after each trading round (the trust games). These sheets remained with the subjects for the duration of the experiment and were used as part of the final cash payment process. We

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<sup>19</sup> We used the names made available in the 1990 census by the Population Division at the U.S. Census Bureau.

<sup>20</sup> We are not concerned that the use of names will undesirably introduce a significant amount of pre-experiment biases against individuals with certain names in the experiment. A stranger may share the same name as our parent, significant other or friend but we clearly recognize that they are two separate individuals. Because people habitually make these distinctions, we opted to use experimental aliases instead of ID numbers in the experiment. However, our design would be incapable of detecting and correcting if a specific experimental alias was to generate some systematic behavior.

hoped that these sheets would reinforce the personal sentiments they developed for their partners as they recorded their successful and unsuccessful interactions with each other and that the first task sheets would naturally serve as reminders for past market experiences in the second task.

### *3.2 A further note on our hypothesis*

Before proceeding, it is worthwhile to discuss how we are using various terms. A “**trade**” is said to have occurred when the offer recipient accepts an offer proposal and has two possible (trade) statuses. A trade is a “**successful trade**” if a buyer and seller agreed on a price and the offer proposer chose to execute the trade. A trade is a “**defected trade**” if a buyer and seller agreed on a price but the offer sender chose to defect (i.e. abandon the trade). A buyer and a seller are said to have a “**positive (trading) relationship**” if the proportion of successful trades between them exceeds 50% of their total number of trades.<sup>21</sup> Conversely, a buyer and a seller are regarded to have a “**negative (trading) relationship**” if the proportion of successful trades between them is less than 50%. If the proportion of successful trades between two participants was exactly 50%, these relationships were labeled as “**ties**,” since they could arguably be perceived as either positive or negative relationships. A buyer and a seller are described

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<sup>21</sup> Although not reported here, our original results are robust to alternative threshold values used in categorizing relationships.



as “**strangers**” if they never successfully agreed on a price during the ten trading rounds.

As is typical of single round trust games, Nash equilibrium dictates that profit-maximizing senders should send zero tokens to responders who, in return, also send zero tokens in the absence of any particular knowledge about each other. However, it may be rational for a profit-maximizing sender to transfer greater than zero tokens if he had some subjective assessment on how trustworthily a responder may behave.

Similarly, a profit-maximizing responder may choose to also reciprocate with a transfer greater than zero tokens if he has warm sentiments towards the sender and hence feels internally obligated to return such a gesture with one of his own. Since the trust game is the absolute final interaction subjects have with each other in our experiment, any sender and responder transfer greater than zero must be a result of something beyond (selfish) profit-maximization.

Our market environment allows subjects to freely select with whom to negotiate and trade and to freely choose between execution and abandonment of the agreed deal.

However, it could be described as an environment that breeds negative behavior since subjects will tend to earn more (and closer to the maximal) profits if they propose an offer and defect on the agreement. Moreover, opting not to trade was costly, as subjects would undoubtedly earn E\$0 and could be subsequently forced to trade with partners they knew defected in the past if they hoped to earn anything in a trading round. As

such, the downside risk of losing potential trading partners in subsequent trading rounds by defecting was minimal in our market environment. If we find support for our main hypothesis in this environment, we can expect to find stronger results in market environments that reward positive behavior.

At this point, we restate our hypothesis using the terms introduced here.

**H1.** *Senders will send larger transfers in the trust game to responders with whom they developed positive relationships in the trading game than to those with whom they share negative relationships.*

**H2.** *Responders will send larger back-transfers in the trust game to senders with whom they developed positive relationships in the trading game than to those with whom they share negative relationships.*

We hypothesize that subjects will choose to reciprocate transfers from those who chose not to defect in their dealings with the subject in the trading game and that the willingness to trust specific individuals will increase as they learn which market participants are more likely to reciprocate a non-zero transfer with a non-zero back-transfer through market interactions. In the trust game, senders are more likely to trust trustworthy responders and choose to evade betrayal or negative emotional costs by transferring smaller amounts to untrustworthy responders. Here, we do not distinguish between different possible responder motivations, as we expect subjects to treat negative

relationships for which they are responsible (i.e. the one who defected most frequently) in the same manner as those relationships for which they are *not* responsible. The responder would anticipate receiving a smaller transfer if he had been defected most frequently and would reciprocate poorly if the particular sender had frequently defected on him.

We offer no predictions with regards to how senders and responders will behave when paired with strangers or with individuals with whom they have an ambiguous relationship (i.e. ties) in the trust game. It is of interest, however, whether strangers and ties are viewed as positive or negative relationships. Given that our market is one that rewards defections, subjects may tend to view strangers and ties as negative relationships and treat them accordingly. We also offer no predictions with regards to how gender, race, citizenship and other demographic factors will impact behavior.

#### *4. Results and Analysis*

In the standard trust game, trust is measured by the size of the sender's transfer ( $x > 0$ ) while trustworthiness is measured as the positive amount transferred by the responder ( $y > 0$ ) in proportion of the available amount ( $3x$ ). We adopt these measures here.

A total of 68 students participated in our experiment. We conducted a total of 8 sessions: 4 sessions where buyers became senders in the trust game and 4 sessions where they

became responders. 7 of our sessions included 8 students while a session included 12 subjects.<sup>22</sup> 63 students were undergraduates and 5 were graduates students with an average age of 21 years old. Less than half of our students (31 students) were female while only 4 of them were economics majors. The majority of our students (54 students) were US citizens and half of our students identified themselves as racially white. With respect to race, the other half was composed of Asians (25% of the total population), black (14.9%), Hispanic (8.9%) and other (1.2%). We collected observations from 16 (36) distinct relationships from a session with 8 (12) students, so we hold data on 148 distinct relationships. One of our subjects opted to not complete the survey while two of them did not to reveal their citizenship. Sessions lasted 120 minutes on average and actual cash earnings ranged between \$0 and \$51, excluding the on-time bonus of \$5. Our subjects earned an average of \$20.5 (including the on-time bonus).

A total of 246 trades occurred in our experiment, 105 of which were successful trades. Of the 148 possible relationships formed in the first task, senders shared 27 positive relationships, 69 negative relationships, 16 ties and 36 strangers with their partners. Likewise, responders shared 30 positive relationships, 68 negative relationships, 19 ties

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<sup>22</sup> Our first session involved 12 subjects (6 buyers and 6 sellers) and 9 trading rounds (one of which was a practice round). As the data analysis rests on relationships between interacting pairs, the number of subjects per session should not affect the results.

and 31 strangers with their partners.<sup>23</sup> Section 4.1 reports findings relevant to our hypotheses and Section 4.2 reports additional findings regarding ties and strangers.

In our experiment, females were less trusting than males (3.53 tokens versus 4.39 tokens;  $p = 0.061$ ), though they reciprocated with statistically the same back-transfer amount (30.39% versus 33.1%;  $p = 0.552$ ).<sup>24</sup> Subjects who self-identified as racially white trusted more than non-white students (4.72 tokens versus 3.59 tokens;  $p = 0.052$ ) but they statistically responded no differently as responders (29.91% versus 33.76%;  $p = 0.562$ ). US citizens trusted significantly more than non-US citizens (4.59 tokens versus 1.88 tokens;  $p = 0.000$ ) but were statistically as trustworthy (31.47% versus 36.04%;  $p =$

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<sup>23</sup> Our sample sizes across relationship types between senders and responders are different. We experienced difficulty programming a single button that allowed, say, a buyer to accept an offer, inform sellers his intent to leave the market and exit the market on z-Tree. Consequently, we separated this process into three steps (referred to as the 3-step process to accepting offers in the instructions in Appendix B). If a subject who wished to accept a proposed offer was unable to complete these three steps with 2.5 minutes allotted for negotiations, z-Tree did not record these transactions accurately and displayed different trade results to the relevant subjects at the end of the round. Across our 8 sessions, this error occurred 7 times out of a total of 246 trades and no pair of traders experienced this error more than once. For these 7 trades, we chose to use the subjects' self-reported records on their record sheets since our hypotheses pertain to the subjects' *perceived* quality of a trading relationship. Subjects' self-reported records and computer-recorded trades were identical for the remaining 239 trades.

<sup>24</sup> We report results from two-sided Mann-Whitney tests throughout this paper. Unless otherwise stated, all mentions of p-values refer to results from Mann-Whitney. However, we performed several other tests to check for robustness and found support for our hypotheses. The results of these tests are reported in Appendix A.

0.175). On average, our students displayed slight risk aversion (5.43 safe choices selected).<sup>25</sup>

**Table 1: Descriptive Statistics**

	Sender Transfers (Tokens)	Responder Transfers (%)
<b>Female</b>	3.531 (3.237)	30.39 (27.019)
<b>Male</b>	4.393 (3.034)	33.1 (26.696)
	$p = 0.061$	$p = 0.552$
<b>US Citizens</b>	4.589 (3.06)	31.473 (28.103)
<b>Non-US Citizens</b>	1.885 (2.455)	36.042 (18.739)
	$p = 0.000$	$p = 0.175$
<b>White</b>	4.721 (3.213)	29.906 (25.15)
<b>Non-White</b>	3.59 (3.025)	33.758 (28.475)
	$p = 0.052$	$p = 0.562$

#### 4.1. Our main hypotheses

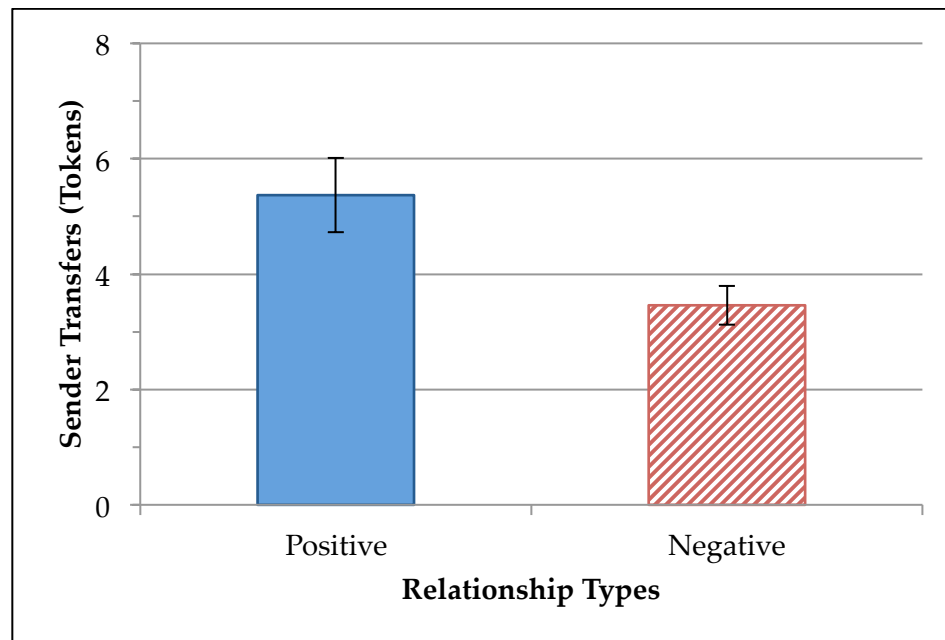
Subjects who developed a positive relationship with another within our trading game exhibited higher levels of trust and reciprocity when interacting with that subject in the trust game than when interacting with those with whom they had developed a negative relationship.

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<sup>25</sup> We performed robustness checks to verify that our results are not driven by gender or any other demographic trait. See Appendix A for these results.

**Result 1.** *Senders send larger transfers to responders with whom they developed a positive relationship in the trading game than to those with whom they share negative relationships.*

As predicted by H1, senders do send significantly larger transfers to those with whom they developed positive relationships in the trading game than to those with whom they share negative relationships (5.37 tokens versus 3.46 tokens;  $p = 0.011$ ). In fact, senders transfer roughly 55% (1.91 tokens) more to those with whom they developed positive relationships than to those with whom they share negative relationships.



**Figure 1: Sender Behavior by Relationship Type**

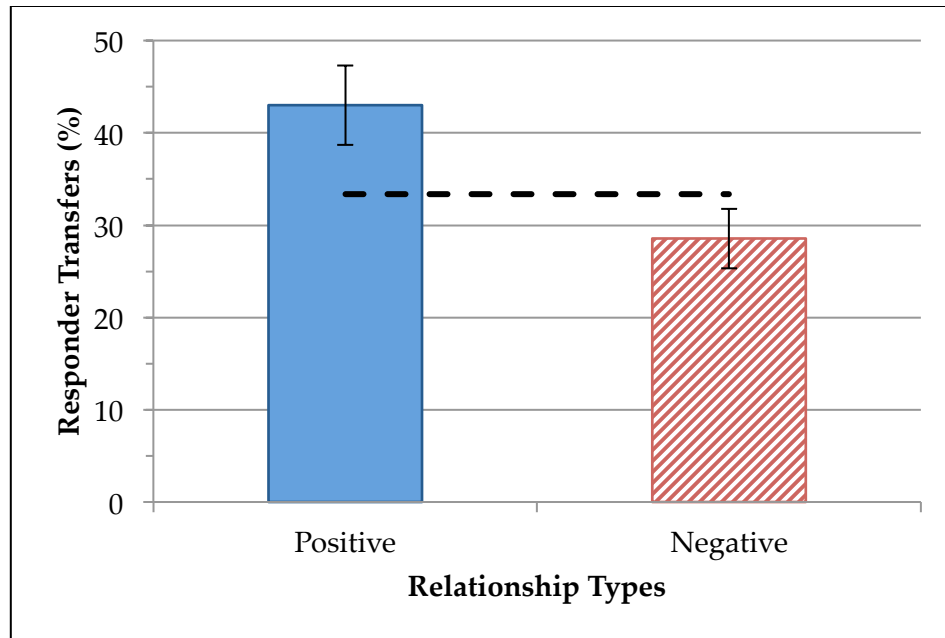
**Table 2: Sender Behavior by Relationship Type**

Relationship Types	Observations	Transfer Average (Tokens)	Standard Error
Positive	27	5.37	0.65
Negative	69	3.46	0.34

**Result 2.** *Responders send larger back-transfers in the trust game to senders with whom they developed positive relationships in the trading game than to those with whom they share negative relationships.*

As predicted by H2, responders do reciprocate with significantly larger back-transfers to those with whom they developed positive relationships in the trading game than to those with whom they share negative relationships (43.01% compared to 28.56%;  $p = 0.003$ ). Like senders, responders back-transfer roughly 50% more (a 14.45pp increase) to those with whom they developed positive relationships than to those with whom they share negative relationships. Note how responders do not return enough tokens for senders to even recover transferred amount (i.e. sender's  $x$  tokens).





**Figure 2: Responder Behavior by Relationship Type**

Note: The dashed line lies at 33.33%, which represents the amount responders should send back to senders in order for senders to recover their spent endowment (i.e. sender's  $x$  tokens).

**Table 3: Responder Behavior by Relationship Type**

Relationship Types	Observations	Transfer Average (%)	Standard Error
Positive	30	43.01	4.32
Negative	68	28.56	3.23

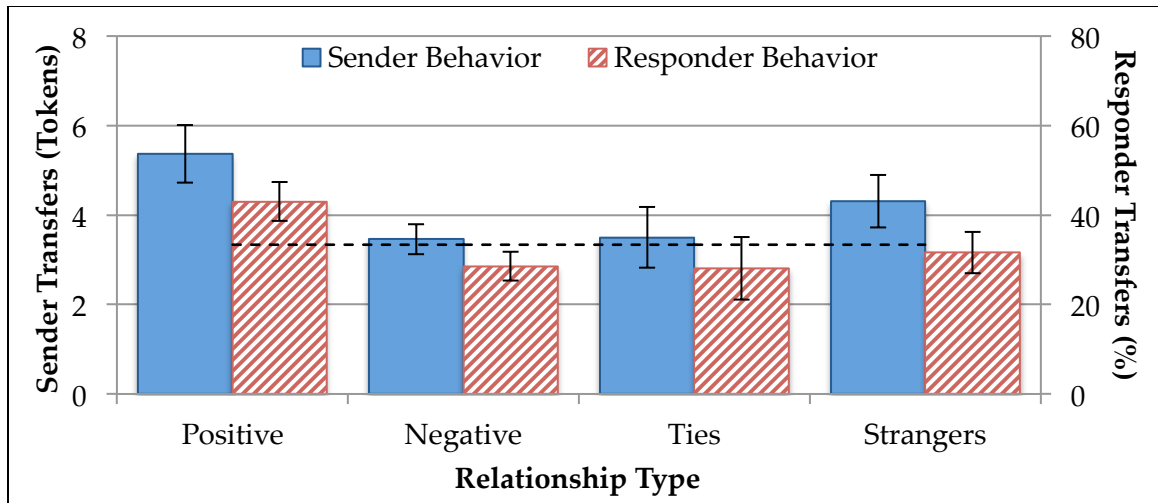
Further analysis revealed that Results 1 and 2 were not driven by gender or nationality.

See Appendix A for these results.

#### *4.2. A comment on strangers and ties*

Statistically, our subjects treated ties and strangers the same as they treated individuals with whom they share negative relationships (sender transfers of negative relationships versus ties  $p = 0.896$ ; sender transfers of negative relationships versus strangers  $p = 0.317$ ; responder back-transfers of negative relationships versus ties  $p = 0.888$ ; responder back-transfers of negative relationships versus strangers  $p = 0.884$ ).

Furthermore, Kruskal-Wallis test comparing sender (responder) behavior associated with negative relationships, ties and strangers generated p-value of 0.592 (0.984), suggesting no statistically meaningful distinctions between the three relationship types. This suggests that (1) subjects are treating partners with whom they have developed positive relationships better than they might otherwise treat them and (2) partners with whom subjects developed negative relationships received the same treatment as strangers. This result is not consistent with subjects punishing individuals with whom they have developed negative relationships (as they are treating them the same as they treat strangers). More specifically, subjects appear to be rewarding market friends rather than punishing market enemies.



**Figure 3: Sender and Responder Behavior by Relationship Type**

Note: The dashed line intersects the right y-axis at 33.33%.

**Table 4: Sender and Responder Behavior by Relationship Type**

<i>Sender Behavior</i>	Relationship Types	Observations	Transfer Average (Tokens)	Standard Error
	Positive	27	5.37	0.65
	Negative	69	3.46	0.34
	Ties	16	3.50	0.68
	Strangers	36	4.31	0.59
Note: In addition to statistical difference between positive and negative relationships, it was also found between positive relationships and ties ( $p = 0.085$ ). Kruskal-Wallis test over all four relationship-types resulted in a p-value of 0.087.				
<i>Responder Behavior</i>	Relationship Types	Observations	Transfer Average (%)	Standard Error
	Positive	30	43.01	4.32
	Negative	68	28.56	3.23
	Ties	19	31.64	6.98
	Strangers	31	28.07	4.65
Notes: In addition to statistical difference between positive and negative relationships, it was also found between positive relationships and ties ( $p = 0.099$ ) and positive relationships and strangers ( $p = 0.008$ ). Kruskal-Wallis test over all four relationship-types resulted in a p-value of 0.02.				

There are, however, limits to how much we can make of these results, especially with regards to strangers. We define two market participants as strangers if they never agreed on a price offer in the 10 rounds of the trading game. This definition prevents us from distinguishing between “true” strangers (i.e. market participants never proposed a price to each other) and “unfortunate” strangers (i.e. at least one of the participants proposed a price that was never accepted). For the purpose of this paper, this distinction is not necessary. However, we cannot exclude the possibility that subjects can learn

about each other by their negotiation behavior even if at the end of the day they never successfully transact.

Although there is no statistical difference between how individuals treat negative relationships and relationships that we characterize as ties, it is possible to imagine that the reverse could have occurred. Since subjects equally experience executed and abandoned trades in ties, it is unclear whether they would describe their relationship to be positive or negative. There is no basis for making a determination *ex ante* and for generalizing from our result here.

#### *4.3. A comment on subject types*

Admittedly, it is possible that the results above are being driven by “good” and “bad” subjects behaving according to their type in both our trading and trust games. Subjects who do not defect in the trading game even when given the opportunity to do so might simply be unlikely to defect in the trust game (by either being distrusting when cast as senders or failing to reciprocate when cast as responders). Similarly, individuals who do defect in the trading game might simply be more likely to defect in the trust game. As noted earlier, we expected individuals to treat others with whom they had developed a positive relationship better than those who they have developed a negative relationship regardless of which subject was responsible for the negative relationship.

It is important to note, however, that even if this explanation for our findings were adopted then it would still suggest that markets, while not necessarily promoting sociability, do make it possible for bonds characterized by trust and reciprocity to develop contrary to what some have suggested. If an honest broker connects with another honest broker in the market then they will tend to reward each other with trust and reciprocity when they interact again in non-market settings.

Although we can not rule out the importance of the above, there is reason to believe that the behavioral differences that subjects exhibit towards others depending on relationship type are not driven entirely by subjects being true to a specific behavioral type when they are engaged in both the trading and trust games. First, 66 of our 68 subjects (97%) defected at least once in our trading game and 49 of 68 subjects (72%) defected at least twice. As such, we observed very few strictly honest subjects in our trading game. Moreover, the strictly honest (2 of our 68 subjects) and mostly honest subjects (17 of our 68 subjects) treated those with whom they enjoyed a positive relationship differently than those with whom they shared a negative relationship. Second, subjects trusted and reciprocated when paired with whom they developed truly positive relationships where no one ever defected in the trust game (7.4 tokens and 51.24%) than when paired with whom they shared a truly negative relationship where they both defected at least once (3.4 tokens and 29.05%) (comparison of sender transfers  $p = 0.009$ ; comparison of responder transfers  $p = 0.04$ ). Third, not all positive relations

are viewed equally. Positive relationships in which the partner had defected at least once were statistically distinct from other positive relationships that were statistically the same as negative relationships.<sup>26</sup> Taken together, this suggests that it is not agent types but experiences in the trading game that is driving subject behavior. Again, subjects are treating market friends better than they are treating market enemies.

## 5. Conclusion

Montesquieu (1748) has claimed that commerce can be a socializing force. “It is almost a general rule,” he states in *The Spirit of the Laws*, “that where the ways of men are gentle there is commerce; where there is commerce, the ways of men are gentle.” Moreover, he claimed, “commerce ... polishes and softens barbarian ways.” If this is true, it is because long-term success in the commercial sphere requires that we both extend a great deal of trust to others and that we at least appear trustworthy to others. And, that these habits of trust and reciprocity spill over into our non-market lives.

Using a two-task experimental design, we investigated the effect of market experience on dyadic social relations characterized by trust and reciprocity. Both senders and

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<sup>26</sup> For instance,  $p\text{-value} = 0.14$  when we compared back-transfers associated with positive relationships where the sender had defected at least once and those where the responder had defected at least once. Similarly,  $p\text{-value} = 0.09$  when we compared back-transfers associated with positive relationships where the sender had defected at least once to those where both the responder and the sender had defected.

responders in trust games transferred significantly larger amounts to partners with whom they shared positive relationships compared to all other relationship types. Additional analysis demonstrated that subject demographics did not account for our main results. It is important to recall that our trading game was designed to allow for the development of relationships characterized by trust and reciprocity that we sometimes observe in actual markets while also allowing for the anonymity and ability to cheat that we also sometimes observe in real-world markets. Subjects had no ability to communicate with one another except through their offers and counter-offers. And, they knew nothing about their potential trading partners except for an alias that identified them throughout the experiment. Subjects did, however, have the ability to learn about the trustworthiness of each other and to record their experiences with each other. That they were able to develop positive relationships in this context suggests that this potential for positive relationships to emerge in markets is even higher in the real world where communication beyond offers and counter-offers and where learning about others beyond their trading behavior are both possible.

Since Montesquieu, several others have highlighted the positive link between markets and levels of trust and trustworthiness as well as the capacity of markets to facilitate the turning of strangers into friends. This paper offers one potential mechanism through which this might occur – one's sincere efforts to honor an unenforced trade in an uncertain market environment. It is encouraging that our data showed trusted



individuals earned at least 50% more tokens than non-trusted individuals in a market environment where honoring a trade agreement was overall less attractive than defection. Not only it is possible for individuals to develop positive relationships within the market, but that these positive market-originated relationships carry over into non-market settings. In other words, our subjects appear to be rewarding market friends as opposed to punishing market enemies.

Although positive market-originated relationships are likely to emerge in any market context, it is unclear whether individuals would continue to uniquely reward those who demonstrated their trustworthiness or whether individuals would switch to exclusively punishing those who demonstrated their untrustworthiness in other types of markets (such as impersonal or less hostile markets) and when relationships expand beyond dyads. To this issue, other scholars have expressed the view that, on net, markets corrupt social bonds and so erode community. Results from this paper imply that this should only be true if markets are, on net, peopled with dishonest traders who defect more often than not. Moreover, they suggest that social interactions in a market setting are not uniquely distinct from other forms of repeated interactions and, with the right conditions, may even encourage sociality. In that sort of environment, most of people's experiences in the market would be trades where at least one party did not live up to their commitments. Happily, most well functioning markets are not peopled with more dishonest than honest traders as indicated by empirical studies on trust and economic

performance. Moreover, our results gives cause to hope that positive social relationships can and do get established even in markets where interacting with a dishonest person is more likely than interacting with an honest person. Note that defection was prevalent in our trading game but subjects were still able to develop positive relationships characterized by trust and reciprocity.

### 3. THE MARKET AS A PROCESS TO DISCOVER WHOM TO TRUST<sup>1</sup>

#### *1. Introduction*

Trust is regarded as an important concept for understanding economic, political, institutional and social activities (Gambetta 1988; Putnam 1993; Williamson 1993; Fukuyama 1995; Keefer and Knack 1997; La Porta et al. 1997; Cook 2001; Guiso et al. 2004). It is a social capital, a resource that exists within a social structure that facilitates decisions of those within this structure (Coleman 1988). Trust adds to greater flexibility in responding to changing market conditions by lowering transaction costs and in promoting coordination by encouraging information sharing (Dyer and Chu 2003). Several scholars have also argued that superior national economic performance correlates with societies with high-trust institutions (North 1990; Fukuyama 1995; Zak and Knack 2001; Algan and Cahuc 2010, 2014) and that social capital such as trust supports economic activities (Hayek 1976; Granovetter 1983; Boettke 2001; Ikeda 2008; Runst 2013). Coupled with the observation that an expansion of the market is critical for

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<sup>1</sup> This chapter is co-authored with Virgil Henry Storr.

nations to prosper (Smith 1981), examining how trust facilitates and is fostered in formal institutions such as markets appear crucial for understanding economic development.

While trust is not a necessary condition for the formation of strong dyadic relationships, it enhances the set of attainable opportunities by the two parties and thus is a desirable relational quality. In the current economic literature on trust and trustworthiness, most attention has been given to studying their impact on various economic performance measures and to identifying their determinants. Yet it still remains unclear how people decide whom to trust as well as when and why they trust strangers. This paper builds on work within Austrian economics concerning the market as a discovery process (Hayek 1945; Lavoie 1986) and on the market as a social space (Storr 2008; Chamlee-Wright and Storr 2015). We argue that the market is a space where people learn about who they can trust and about others' trustworthiness through market interactions. (By market interactions, we specifically refer to an individual's personal experience from transacting with another.) This argument combines and expands on the previous work on the market as a discovery process, prices as tacit knowledge of time and place, and research in social economy. The market process, we contend, also produces valuable social and inarticulate information about the trustworthiness of trading partners by revealing how they conduct themselves in the buying and selling of goods. People can reliably use this social information to fulfill other economic and social objectives, as the market is self-regulating and trust-promoting.

There are compelling reasons to discuss the link between trust and markets. First, economists have traditionally studied markets separately from other spheres of social interactions and have instead concentrated on its ability to coordinate activity and to efficiently allocate resources. Although this analytical approach has significant value in understanding the market mechanism, studying markets in isolation disregards the possible spillover effects of market activity onto social interactions in other spheres, thereby limiting our understanding of the market's overall welfare effects. Since the market and society are embedded within each other (Granovetter 1985), there are social and economic reasons to examine the role of trust and trustworthiness in markets (Chamlee-Wright and Storr 2015).

Second, various types of social ties do develop and are strengthened as a result of the market in reality. For example, coworkers often form strong bonds as a result of their common experiences and circumstances (Zavella 1985; Bridge and Baxter 1992; Henderson and Argyle 1995); competitors can develop relations with each other (Chamlee-Wright 1997; Ingram and Roberts 2000); principle-client, seller-buyer, master-apprentice and mentor-protégé relationships can sometimes deepen into friendships and family-like ties (Kram 1983; Gardiner 1998; Butcher et al. 2002; Haytko 2004); and successful family businesses exist, straddling both the economic and social spheres. The fact that ties that are both social and economic mature in markets suggests that repeated

interactions with business partners in the market can mimic social interactions with friends and family.

Third, much of the standard economics literature advances a rational, calculative approach to trust (Williamson 1975) and effectively ignores trust and trustworthiness. Neoclassical economics assumes trading partners are opportunistic, that they will constantly be tempted by larger gains and do exploit others' vulnerabilities. As such, trading partners are assumed to only behave cooperatively and in each other's benefit when incentives are aligned. When it is in their mutual interest to cooperate, they will then act accordingly and reciprocate positively. But they can expect each other to defect whenever their incentives are not aligned and defect at the slightest temptation without hesitation (if they do not expect to deal with their trading partner in the future). In fact, scholarship in strategic management, which focuses on understanding the sources of comparative advantages for firms (Rumelt et al. 1991), have posited that trustworthiness can be on such source and therefore a valuable strategy for firms (Barney and Hansen 1994). The trait of being instinctively opportunistic and only engaging in reciprocal behavior when it maximizes individual benefits is arguably the polar opposite of being trustworthy in any meaningful sense, where trading partners do not exploit each others' vulnerabilities (even if they would not suffer any sanction from doing so).<sup>2</sup> This notion

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<sup>2</sup> Stating "X trusts Y" implies X expects Y would not exploit X's vulnerability. In turn, "Y is trustworthy" implies that Y has demonstrated or indicated in some way that X can believe (or hope) Y to behave in X's benefit, or at least cause no harm, without enforcement or monitoring.

of trust depicts a very fragile picture of an economy: even if an economic environment is peopled with individuals who display high trust and have good intentions, unvetted opportunists can enter and take advantage of the system and, as a result, even trustworthy people with good intentions are forced to defend themselves from exploitation. However, we do not need to look far to see that this depiction of trust and trustworthiness is not ubiquitous in real life.

The market is a process for the discovery of knowledge including knowledge about who to trust. The remainder of the paper is structured as follows. In Section 2, we will provide an overview of the trust literature in empirical economics. Section 3 builds a case for markets as social spaces where market participants can discover each other's trustworthiness. Lastly, Section 4 concludes.

## *2. Markets, Trust and Trustworthiness: A short literature review*

There is no agreement across the social sciences on how trust and trustworthiness should be defined and measured (Rousseau et al. 1998). Some scholars have used the term, trust, to refer to cooperation within a group and psychological state. Social psychologists have viewed trust as a binary variable, while empirical economists tend to view trust as a spectrum. Here, we adopt Foddy and Yamagishi's (2009) definition of interpersonal trust: it is an "expectation of beneficent reciprocity from others in

uncertain or risky situations” and “a belief that others will act in a way to benefit or at least not harm us, before we know the outcome of their behaviors” (Ibid., 17).

Trustworthiness derives directly from the definition of trust: an individual is trustworthy if he can be expected not to deliberately exploit their partners’ vulnerabilities for their own gain.

Studies across multiple disciplines have postulated a positive link between social capital (such as trust) and economic performance (e.g. Banfield 1958; Putnam 1993; Fukuyama 1995; Keefer and Knack 1997). While some found positive correlations between trust measures and economic growth (La Porta et al. 1997; Zak and Knack 2001; Guiso, Sapienza and Zingales 2004), others reported a stronger, causal effect of trust on economic performance (Tabellini 2008; Algan and Cahuc 2010). More shared trust between two European countries measured by cultural, historical, genetic and somatic similarities led to more trade between the countries, more portfolio investment and more direct investment (Guiso, Sapienza and Luigi 2009). This effect remained even after controlling for widespread perceptions about the trustworthiness of a country and was stronger for goods that Guiso, Sapienza and Zingales (2009) and Rauch (1999) respectively describe as trust intensive and differentiated goods.<sup>3</sup>

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<sup>3</sup> Unlike primary goods, Rauch (1999) argued very few manufactured goods were traded in organized exchanges (i.e. markets) as the “the heterogeneity of manufactures along the dimensions of both characteristics and quality interferes with the ability of their prices to signal relative scarcity” (Ibid., 7) and are thus instead traded on traders’ preexisting network of



Furthermore, various studies suggest trust is necessary for healthy economic and social institutions. Countries with institutions that can act as checks to governments' abuse of power displayed higher levels of trust (Keefer and Knack 1997). Factors such as government performance measures (such as efficiency of judicial systems, corruption, bureaucratic quality, tax compliance), civic participation and social efficiency variables (such as infrastructure quality, infant mortality rates and educational attainment) contributed to the formation of trust and other social capital (Putnam 1993; La Porta et al. 1997; Berggren and Jordhal 2006). High-trust societies also experienced less government intervention (Aghion et al. 2010) and better financial institutions (Guiso, Sapienza and Zingales 2004). (See also Fehr 2009 and Algan and Cahuc 2014 for comprehensive surveys on the trust literature in economics.) In fact, the preference to perform financial transactions with families and friends was more intense in areas with low social capital and was more pronounced in areas where legal enforcement was low and among less educated people (Guiso, Sapienza and Zingales 2004). Interestingly, countries with dominant hierarchical religions (Catholicism, Eastern Orthodoxy and Islam) displayed lower aggregate levels of trust (La Porta et al. 1997; see also Putnam 1993), suggesting that the formation of *vertical* networks of cooperation may deter the formation of *horizontal* networks of cooperation (i.e. interpersonal trust).

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contacts. As these goods are likely to heavily rely on the strength of the traders' ties, Guiso, Sapienza and Zingales (2009) classify these goods as trust intensive.

Social norms also play powerful roles in the labor market and in organizations. Some labor economists view wage rigidity to have sociological underpinnings. From the perspective that people are altruistic and care about reciprocity and fairness norms, a person who is altruistic would act kindly to another with the expectation that he would be fair and thus reciprocate positively in some way. For example, an employer would willingly pay an employee above-market-clearing wage with the expectation (but not guarantee) that the employee would supply more effort than they would at market-clearing wage (Akerlof 1982). Empirical economists often interpret this gift exchange as a sequential trust game and do find the gift of higher wage is reciprocated with another gift of higher efforts (Argell and Lundborg 1995; Gneezy and List 2006; Kube et al. 2013). Furthermore, trust improves organizations' efficiencies by lower monitoring costs (Frank 1988), lowering turnover and increasing uncompensated positive behavior from employees (Dirks and Ferrin 2002; Konovsky and Pugh 1994). Last but not least, social norms contribute to the regulation of the interactions between group members (Bicchieri and Xiao 2009), the improvement of cooperation (Andreoni 1995) and coordination problem solutions (Mehta, Starmer and Sugden 1994).

In experimental economics, considerable attention has been given to the behavioral measurement of trust and trustworthiness and the identification of their determinants. Although there are other experimental instruments of measure (Camerer and Weigelt 1988; Fehr, Kirchsteiger and Riedl 1993), the most popular one is the trust game (also

referred to as the investment game) by Berg, Dickhaut and McCabe (1995). The basic set-up of the game is as follows. The trust game is a two-person, sequential move game. The first mover transfers some portion of his endowment of \$10 to the second mover. The experimenter triples it before this transfer reaches the second mover. Afterwards, the second mover decides how to split the tripled transfer and transfers some portion back to the first mover and the game ends. Conventionally, experimentalists view the first mover's transfer as his willingness to trust and the second mover's transfer as the degree of her trustworthiness (i.e. willingness to reciprocate trust).<sup>4</sup>

There exist a few variants on this game (e.g. restricting transfer choices to a binary choice, endowing both first and second movers, playing both roles and repeated interactions) (Snijder 1996; Burks et al. 2003; van den Bos, van Dijk and Crone 2012) and recent efforts have examined its limitations to measure trust (Bohnet and Zeckhauser 2004; Cox 2004).<sup>5</sup> For instance, Cox (2004) has argued that trust as measured using the trust game confuses trust with altruism. Similarly, Bohnet and Zeckhauser (2004), Bohnet et al. (2009) and Aimone and Houser (2011) argued that it confounds trust with betrayal aversion. Several other studies have argued that the measurement omits important facets of trust such as financial health and marital status (Ermisch et al. 2009), age (Fehr

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<sup>4</sup> There is some debate among behavioral and experimental economists regarding whether it is appropriate to interchangeably use trustworthiness and reciprocity to refer to the second mover's transfer (Camerer 2003; Ostrom and Walker 2003). In this paper, we do not comment on this debate and will freely alternate between the two terms.

<sup>5</sup> See Johnson and Mislin 2011 for a meta-analysis of trust games conducted around the world.

and List 2004; Sutter and Kocher 2007), gender (Croson and Buchan 1999), risk attitudes (Eckel and Wilson 2004; Houser, Schunk and Winter 2010), beliefs and attitudes (Berner and Halldorsson 2010) and appearance (Eckel and Petrie 2011).

Other studies suggest that geographical regions and social network matter for trust.

Americans regularly display highest levels of trust and trustworthiness while Africans show the lowest levels as measured by the trust game (Johnson and Mislin 2011;

Ensminger and Cook 2014). Social network centrality (i.e. social network position) is another source of differential trust; controlling for socio-demographic variables, an

individual who occupies a position that is more central in a network acts more

trustworthily than another who is more peripheral on the network (Barr et al. 2009).

Trust and trustworthiness grows the closer the interacting parties are in social distance (Buchan, Croson and Dawes 2002; Binzel and Fehr 2009) and race, nationality and social status can affect trustworthiness (Glaeser et al. 2000). Moreover, trust also appears to be endogenous to a region's institutions (Fehr 2009; Nunn and Wantchekon 2011).

Despite this vast experimental economics literature on trust, relatively few studies speak directly about the link between markets and trust and even fewer addresses the

spillover effects of markets onto society. In a series of semi-field economic experiments in small-scaled societies, researchers found that market integration has positive impacts

on measures of trust, trustworthiness, cooperation and altruism (Henrich et al. 2004,

2005; Tracer 2004; Tu and Bulte 2010); in other words, individuals exhibited more

prosocial behavior the more the market was integrated into their community. In the same project, a community's degree of exposure to markets predicted offer sizes in the ultimatum and dictator games (Ensminger 2004) and generally correlated with higher levels of other-regarding preferences (Henrich et al. 2010). Similarly, the mere thought of markets can induce subjects to increase their trust in anonymous partners (Al-Ubaydli et al. 2013). Contrary to these studies, others found that market exposure was not a noteworthy determinant of prosocial behavior of a particular community (Gurven 2004) and that subjects were less likely to exhibit other-regarding and moral preferences the more laboratory experiments adopted market features (Bowles 1998; Hoffman et al. 1994; Schotter et al. 1996; Reeson and Tisdell 2010). In fact, Falk and Szech (2013) claimed that market participation can decay morality.<sup>6</sup>

To the best of our knowledge, only a couple of papers in experimental economics directly address the effect of market institutions on social preferences. Herz and Taubinsky (2015) examined the impact of market experience on subsequent fairness preferences. They found that market experience, as defined by personal payoff experience (subjects' private surpluses from past transactions) and observational experience (observing outcomes of all transactions by inducing a common market experience) matter in shaping fairness preferences. Traders who are used to high market

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<sup>6</sup> See Sandel (2012) to find criticisms of the market on morals and society. In response, Choi and Storr (2016) explores how the market can be a social space where morality is exercised and promoted and thus foster meaningful social relationships. See Langrill and Storr (2012) on markets as a moral teacher.

prices were more likely to perceive high prices as fair and low prices as unfair, while traders who are used to low prices were more likely to perceive low prices as fair and high prices as generous. Similarly, Brandts and Riedl (2016) studied the causal effect of market experience on subsequent cooperation. They concluded that it is *not* the *experience of competing* in a highly competitive market that corrodes efficient cooperation, but rather it is *having competed against each other* in the same market that obstructs cooperation. For those market participants who never competed in the same market (i.e. market strangers), market experience actually fostered efficient cooperation. Their findings were robust for market participants who had favorable experiences (i.e. easily made transactions at favorable prices) and for those who had unfavorable experiences.

On the topic of trust and market relationships, Renner and Tyran (2004) investigated whether price rigidity in a market may arise from long-term buyer and seller relationships based on trust and trustworthiness. Customer markets are those markets that are defined by longstanding relationships between buyers and sellers and where relationships are defined by customer loyalty: buyers pay higher prices because they trust sellers to provide high quality products. Okun (1981) speculated that (1) sellers are hesitant to raise prices in response to temporary cost shocks in such markets because changes in the conditions in implicit contracts may alienate buyers and thus terminate customer relations but (2) customers are more likely to forgive sellers if price increases are justified by cost increases. Renner and Tyran (2004) experimentally found evidence

for Okun's (1981) claim that trust indeed shapes market outcomes. Okun (1981) and Renner and Tyran's (2004) works can be interpreted as suggesting that relationships based on trust and trustworthiness can and do form market interactions and that such relationships may inspire buyers and sellers to act cordially to each other.

Finally, Choi and Storr (2015a) explored whether and how market transactions shape social relationships and influence subsequent decisions to trust and act trustworthily. In their study, subjects showed significantly more trust and behaved more trustworthily towards trading partners who demonstrated the disinclination to defect on implicit agreements compared to those who demonstrated inclination to defect. Moreover, market experience had a starker impact on trustworthiness than trust; subjects trusted both honest trading partners and strangers as first movers in the trust game but subjects reciprocated *only* to honest partners as second movers.<sup>7</sup> Their findings suggest that not only can narrowly-defined economic interactions generate valuable social information about specific persons, but widespread generalized trust may need to begin with acting trustworthily towards those we interact with on a regular basis in both the economic and social spheres.

The above-mentioned experimental papers speak to the effects of market experience on prosocial behaviors and preferences, namely cooperation, fairness norms, trust and

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<sup>7</sup> In this context, strangers were defined as those trading partners with whom a subject did not enter an agreement in the market game.

trustworthiness, and to the spillover from the economic sphere into the extraeconomic (i.e. social) sphere. Furthermore, they all purport a path dependency story to trust and trustworthiness, as *past* economic interactions are shaping *future* behavior.<sup>8</sup> As real markets are never completely separate from society and given the interconnectedness of our global economy and society, studying feedbacks between market and social institutions is becoming increasingly important.

Several Austrian economists have linked social capital to the concepts of entrepreneurial discovery and social learning. Social capital (in the form of trust and trusting relationships) is traditionally portrayed as a production input, as a stock (where additional investment merely increases quantity) and as being intimately tied to the relationships people maintain. Bourdieu (1986, 248) defined social capital as “the aggregate of actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition.” Similarly, Coleman (1988b, S98) defined social capital as a function of “a variety of entities with two elements in common: they all consist of some aspect of social

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<sup>8</sup> Other studies on trust and trustworthiness also corroborate this path dependency. For example, Reuben, Sapienza and Zingales (2009) experimentally found that subjects responded to others’ low expectations for their trustworthiness and that low expectations for trustworthy behavior bred distrust. La Porta et al. (1997) theorized that trust is more important for “ensuring cooperation between strangers and people who encounter infrequently than for supporting cooperation among people who interact frequently and repeatedly” because “[i]n the latter situations, such as families and partnerships, reputations and ample opportunities for future punishment would support cooperation even with low levels of trust” (La Porta et al 1997, 333). Hence, learning to trust strangers depends on first learning to trust family and friends.



structure, and they facilitate certain actions of actors – whether persons or corporate actors – within the structure” and Putnam (1993) equated social networks to social capital. In this light, trust is perceived as a desirable relational quality and a social capital by extension.

However, Austrian economists argue, social capital could (and should) be understood as a flow variable: as a structure that is comprised of heterogeneous elements that can sometimes complement and sometimes compete against each other (Lachmann 1978). This interpretation of social capital as constantly-changing is consistent with the idea of creative investors (social entrepreneurs) who seek to enhance the existing social capital stock by searching for the combinations of elements that are both technologically feasible and economically relevant for their religious or secular objectives. Here, a successful entrepreneur is the “one who pays close attention to the configuration of these relationships, nurtures and maintains them, and adjusts and re-groups when necessary” (Chamlee-Wright 2008, 46) and thus “[s]ocial capital is a system of dispersed knowledge – countless configuration of relationships tried, failed, reconfigured, and tried again” (Ibid., 47). Appreciating social capital in this manner allows us to grasp “social capital development as a process of social learning – how knowledge is generated and diffused throughout a community and how that knowledge frequently transcend the individual in a form that is widely accessible across the community and through time” (Ibid., 43).

An illustration of heterogeneous social capital and social entrepreneurship is in the context of community recovery and redevelopment after natural disasters. Social entrepreneurs perform important functions in post-disaster community recovery as they reconstruct and repurpose existing social capital for new objectives. After devastating natural disasters, existing social capital can be deployed for two types of activities – mutual assistance and rent seeking. On the one hand, entrepreneurs employ social capital (here, social networks) as main devices of information dissemination, keys to resolving collective action problems and coordinating devices for emergency management, basic goods provision and restoration of damaged homes, businesses and other communal spaces (Chamlee-Wright and Storr 2009, 2010). On the other hand, the same networks can be leveraged to apply political pressure and redirect government resources to specific communities (Chamlee-Wright and Storr 2011). Hence, investment into strengthening and forming social ties can reinforce or hinder recovery efforts depending on how a community chooses to use its social capital. Alternatively stated, the type of activity a community learns to carry out using its social capital relies on the relative returns of the activities and public policy.

Chamlee-Wright and Storr's (2009, 2010, 2011) investigation of networks and social entrepreneurship in society act as a useful parallel to trust and markets. Both social and commercial entrepreneurs respond to incentives; successes breed emulation by others while failures encourages entrepreneurs to cease or to avoid certain activities and

ventures. Furthermore, investment into social capital undoubtedly expedites both social and commercial activities in reality. As in society, trust and relationships in the market setting can be mobilized to cordialize and aggress its participants and activities (i.e. commerce).

Ikeda (2008) proposed that social capital is complementary to an entrepreneurially driven market process. Social capital, such as trust, “has been viewed not only as a link in a social network but also as the network itself, the knowledge carried over that network, or the norms that support it” (Ibid., 167). It is constituted by knowledge that is (1) partial: no one individual possesses all available social information in the economy; (2) tacit: the meaning and use of a particular social capital cannot be fully articulated and only becomes clearer with context; (3) common: all members of a community share the same expectations regarding its appropriate use and such; and (4) value-creating: social capital complements other inputs in production (Ibid., 171). As such, trust is necessarily an emergent and unplanned phenomenon and cannot be forced onto (or out of) members of a community and gaining trust and perceiving one’s trustworthiness must result from personal (and repeated) interactions with specific others. To the extent that the market is uncertain and path-dependent (i.e. dynamic) and an emergent process, trust and reciprocity not only support the standard mechanical operations of a market but also aid the entrepreneurial discovery that occurs in the market. It implies that social

and market coordination occurs simultaneously and that social capital such as trust will grow (and decay) alongside the market.

Although trust and trustworthiness has been widely studied, the current economic scholarship continue to primarily perceive trust to be an exogenous stock parameter that facilitate the activities and behavior of interest. While the notion that these activities and behaviors have the ability to reshape individuals' initial levels of trust and trustworthiness underlies most of these studies, it has hardly been given explicit attention. Moreover, these studies have not explored the notion that the market is a discovery process where individuals learn (amongst other things) whom to trust. Accepting the notions of the self-regulating market, the market as a discovery process and the market being embedded in a social structure is the first step towards building an analytical understanding of how trust can be learned and the trustworthiness of others can be discovered in markets.

### *3. Market as a learning space*

Economists tend to view markets as sterile environments (Storr 2008, 141) and have largely ignored the sociality that occurs in market settings. In considering how the market could serve as a space for people to learn to trust and about others' trustworthiness, the first step must be to recognize the market as a space where both

economic and social interactions happen. Only then could market interactions, where interested individuals are interacting with the ultimate aim to profit, be seen as learning opportunities about trading partners.

Austrian economists have embraced the notion that markets are dynamic phenomena and have been critical of economic models that treat markets as static embodiments of satisfied equilibrium conditions. Indeed, they have rejected economic models that treat the market as an outcome of perfect and immediate economic coordination by maximizing agents who simultaneously choose under constraints. These models, they contend, act as if “[e]ach decision, whether made by consumer, firm, or resource owner, is made within a definite known framework made up of a given objective function, a given set of resource constraints, and a given set of technologically or economically feasible ways of transforming resources into desired objectives” (Kirzner 1997, 70). The market equilibrating process, then, does not generate new (i.e. previously unknown) information or knowledge and does not permit any meaningful interactions to occur between market participants. In essence, static models of the market cannot capture the social learning that occurs in markets.

In contrast, Austrian economics regard the market as a process that permits market participants to acquire new information and adapt their knowledge with changing information. Here, the market equilibrates through a dynamic and rivalrous process that arises from entrepreneurial discovery. The entrepreneur is perceived as an individual

who, driven to profit, seize opportunities by taking speculative yet innovative actions. Entrepreneurs pursuing such opportunities first exploit, then narrow the disparity in the price structure, thereby unconsciously guiding the market as a collective towards a steady state. Entrepreneurial activity, to Austrian economists, leads market participants to attain a better mutual understanding of individual plans created by each other. Hence, through interaction, the market systematically tends towards a state of heightened awareness by market participants and thus tends to nudge price and quantity values towards those consistent with equilibrium values (Kirzner 1997, 62).

The concepts of entrepreneurship, discovery and rivalrous competition occupy key roles in Austrian notion of market equilibration. The entrepreneur has no function in neoclassical theory, as no profit and uncertainty exist in equilibrium, and the traditional neoclassical agent operates in an environment of given prices and output quantities. Conversely, the Austrian agent operates in an environment where his actions change prices and output quantities and his role as the profit-seeking entrepreneur is intimately tied to the market process. In this dynamic world, the entrepreneurial discovery uncovers previously overlooked profit opportunities, identifies opportunities left undiscovered or unexploited due to earlier entrepreneurial errors and exposes new information that no one had thought to be lacking. This Austrian notion of market forms an understructure within which social learning could develop.

Hayek (1945) argued that the society faces what is commonly referred to as the knowledge problem: a question of how a society could coordinate economic activities of individual agents whose knowledge and plans are private, tacit and dispersed. He proposed the market price mechanism to be an effective and efficient method of generating, aggregating and communicating this information; a price may not and cannot communicate all of the knowledge available in the economy, but it can communicate the minimum relevant information necessary for particular economic decisions. For this reason, a centrally planned economy could never match the informational efficiency of a market economy even with well-intentioned planners because all available knowledge can never be formulated into equations that these planners can then effectively use (Lavoie 1986, 6).

Pertaining to learning whom to trust, this Hayekian knowledge problem can be decomposed as highlighting a logistical issue (i.e. the complexity knowledge problem) and a contextual issue (i.e. the contextual knowledge problem). Lavoie (1986) stressed the inarticulate knowledge aspect in the contextual knowledge problem. Inarticulate knowledge exists because some knowledge relevant for economic coordination is endogenous to the market process and is not consciously known by the economic agents (and is difficult to articulate even when consciously known). In Lavoie's (1986) perspective, the core of the knowledge problem is not that central planners do not possess the knowledge businesspersons collectively do or that the knowledge would

corrode in its transmission. Rather, it is simply that some knowledge is inarticulate and people know more than what they could express. Like articulate knowledge, inarticulate knowledge shapes our economic decisions. It is “fundamentally premised on our being embedded in a social process about the working of which we have only the crudest conception” (Lavoie 1986, 12) and is the relevant know-how of any economic or social production and organization; “businessmen under capitalism ... ‘know how’ to operate their business relatively efficiently even though they do not ‘know that’ what they are doing amounts to the selection of a production technique that to some extent adheres to the efficiency standards of theoretical economics” (Ibid., 2). Basically, this type of knowledge just cannot exist independent of the market process.

A crucial implication of inarticulate knowledge, Lavoie (1986) described, is that a pre-coordinated, non-market (but decentralized) mechanism for price adjustment cannot match the efficiency of a post-coordinated, market mechanism; nor can such pre-coordinated mechanism recreate the knowledge-generating and –revealing capabilities of prices and market processes.<sup>9</sup> In this context, a price serves as an “indicator of the relative scarcity of some particular good or service of whose unspecified qualities and attributes we are only subsidiarily aware. Yet were these qualities of a good to change in the slightest respect this could change incremental decisions about the uses of the good just as significant as a change in price” (Ibid., 16). In other words, articulated

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<sup>9</sup> Lavoie (1986) referred to this mechanism as market-socialist models.



information, such as prices, only hold meaning to market participants because it is “juxtaposed against a wide background of inarticulate knowledge gleaned from a vast experience of habitual productive activity” (Ibid.); the possessor of the knowledge may not be able to articulate it in any comprehensible way, but he is capable of deliberately acting upon it. Only a post-coordinated, decentralized price adjustment mechanism (i.e. the market) can draw out and utilize this inarticulate knowledge. Although Lavoie (1986) directed his energy towards strengthening the case against centrally planned economies, his work has direct implications for interpersonal trust and trustworthiness, and the potential for markets to reveal social information regarding whom to trust.

Based on the Austrian notion of markets as dynamic and interactive spaces, there are three distinct reasons to suspect that markets can indeed serve spaces that teach market participants whom to trust: (1) every market transaction represents a chance for a person to personally observe a trading partner’s actions and assess their trustworthiness; (2) each market interaction serves as a means to discover a trading partner’s personality and character and, thus, evaluate their trustworthiness; and (3) over time, markets have developed systems that widely communicate reputations and instruments that encourage market participants to take more risks.

First, every market transaction presents an opportunity for people to engage in opportunism and thus reveals and obviously distinguishes between the trustworthy and the untrustworthy. In a bilateral exchange, people can become acutely aware of trading

partners who deliberately refrain from the temptation of larger profits, cheating and theft. It is particularly true when such deceitful behavior is pervasive in the market and effortless for people to engage. In this light, market interactions can train people to trust specific partners and to be trustworthy towards them with each successful transaction. Likewise, unsuccessful transactions can inform people whom to distrust (or avoid) in future interactions.

Second, market interactions provide a person with occasions to discover his trading partners' unquantifiable qualities by observing how they interact with him and with others. When people negotiate and engage in commerce with each other, they care about not only the ultimate outcome but also how they navigated to the outcome; after all, everyone prefers to cooperate with likeable and agreeable people and this is true regardless whether people interact with each other as business partners, coworkers, suppliers or in other capacities. The manner in which a person bargains, communicates and behaves discloses valuable information about his personality and character. Market interactions, like other types of social interactions, can thus reveal people's natural dispositions that can influence subjective evaluations of their dependability.

Third, real world markets have evolved mechanisms that communicate the reputation of others and that reduce the cost of betrayal. People naturally seek out credible assurances before committing to exchanges with strangers and inquire about their reputations. Prior to the Internet, people gathered information regarding reputations of potential business

partners through past personal experience, informal reports from close associates and professional references from their past vendors. With the Internet, large-scale reputation systems that collect, aggregate and distribute feedback about potential partners' past behavior have emerged. (Some examples include the Airbnb vendor and consumer rating system and the Amazon seller rating system.) These systems assist people in choosing whom to trust and encouraging trustworthy behavior whilst simultaneously deterring dishonest behavior. Furthermore, the market has developed instruments such as insurance and warranties to motivate people to take more risks by reducing the cost of betrayal that people experience when they mistakenly place trust in dishonest trading partners and/or misread the market. These instruments thus permit us to take risks until we know better.

Accepting the view of markets as spaces where people learn whom to trust necessarily implies that the reciprocal notion of markets as spaces where people learn to be trustworthy must also be recognized. After all, it seems reasonable to assume that spaces where people prefer to interact with trustworthy partners would also incentivize them to act more trustworthily. As such, markets can be social spaces where only economic activity is embedded in social relations and where meaningful social connections develop. The question of how social relationships based on trust could develop in market settings have not been extensively studied, but economic sociologists and

economists (in particular, those in the Austrian tradition) have begun exploring this theme.

Smith (1982b, 22-23 and 153-154) discussed how people would learn to modulate their behavior through social interactions: because we are inclined to place more weight on our own experiences and feelings, we should overcome our egocentric focus and improve our conduct and sentiments by conversing with friends and strangers who would put our tragedies and fortunes in perspective. He thus concluded, "Society and conversation, therefore, are the most powerful remedies for restoring the mind to its tranquility" (Ibid., 23). Smith (1982a, 538) reiterated a similar logic to that the market can actually discipline bad agents. Trade between countries and individuals should be based on a "bond of union and animosity" (Smith 1981, 493). Moreover, Smith (1982a, 538) has stated, "Of all the nations in Europe, the Dutch, the most commercial, are the most faithful to their word" and "whenever commerce is introduced into any country, probity and punctuality always accompany it."<sup>10</sup> Although not explicitly stated in these terms, Smith was talking about how the market *teaches* people to act with honor in market interactions; stated inversely, Smith was suggesting that people *learn* to act with integrity and honesty by engaging in trade and interacting with each other in a market setting.

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<sup>10</sup> Montesquieu (1961), Hume (1985) and Hirschman (1977) also echoed this theme that markets, or commerce, can develop human morality. This argument is commonly referred to as the *doux commerce* thesis. More recently, McCloskey (1994, 2006) talked about how capitalism did not taint our souls and rather bettered them.

Economic sociologists and scholars from other disciplines have long spoken about the problem of embeddedness: that economic environments and institutions, such as markets, are overlain with social content and are embedded in matrices of social relationships (Granovetter 1983, 1985; Portes and Sensenbrenner 1993; Uzzi 1996). In their view, the market cannot survive without the community and analyzing economic behavior and institutions in the standard neoclassical way can lead to important omissions in our understanding. Granovetter (1985) stressed that markets are embedded in social networks and that concrete interpersonal relationships, not generalized morality, generate the trust we observe in markets. Business transactions are often conducted through one's network; businesspersons commonly prefer to transact with partners with known reputations and frequently seek out information about potential partners when reputation information is not available. While generalized information about a potential partner (that he is reliable and/or supplies excellent products) may be satisfactory, businesspersons prefer and place more confidence on the same information delivered by friends and place the highest confidence in their own experience. Thus, our "own past dealings" are our most preferred and trusted source of information because not only is it cheap, rich in detail and accurate, those party to a continuing relationship have economic and social reasons to behave trustworthily and to abstain from opportunism (Ibid., 490).<sup>11</sup> Yet, this concept of embeddedness neglects to consider the

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<sup>11</sup> Granovetter (1983), Portes and Sensenbrenner (1993) and Uzzi (1996, 1999) used examples from various labor markets to empirically illustrate this concept of embeddedness and the extent to

inverse: how the community can also be embedded in the market and how market activity can also shape social relationships (Boettke and Storr 2002).<sup>12</sup>

Austrian economics has long viewed the market as an entity beyond just a mere price and distribution mechanism; again, Austrian economists regard the market as a social structure (Mises 1949), a spontaneous order, an information gathering process (Hayek 1945) and a discovery process (Kirzner 1973, 1997). Although Austrian economics has paid some attention to the importance of cultural transmission in understanding the evolution of social norms and the extended order, it has largely overlooked the social economy – how social behavior can affect economic behavior and outcomes and vice versa – until recently. Lavoie (1991), for instance, examined the connection between culture and entrepreneurship and argued that entrepreneurship is a cultural process; it necessarily transpires within a cultural context and shapes culture in return. Chamlee-Wright (1997) and Storr (2004, 2012) further explained how culture steers the entrepreneurial focus, engages with other institutions that governs markets and molds economic development and self-governance of a community.

Storr (2008) proposed to perceive the market as social space where meaningful social (i.e. extraeconomic) conversations occur. According to Lefebvre (1991), social spaces are

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which markets and society are intertwined.

<sup>12</sup> Admittedly Boettke and Storr (2002) do note that market relationships can become overlaid by social content.

products of social activity and social life pursued by intermingling individuals and enable social actions. Specific social spaces encourage particular routine habits while discouraging others and, thus, are used for specific purposes. Consequently, certain types of social relationships can form and be maintained in these spaces. Extending Lefebvre's argument with the concept of social embeddedness, Storr (2008) asserted that the market is a social space that is superimposed by the community and thus both economic and extraeconomic (i.e. social) relationships develop and are sustained by the market. "[U]nlike the concept of social capital, which focuses on the economic significance of social relations, viewing the market as a social space emphasizes the social significance of economic relationships" (Ibid., 143-144).

Chamlee-Wright and Storr (2015) provided an analogy similar to Hayek's use of knowledge in the market and the price system to examine how socially embedded resources shaping each other would advance "our understanding of social learning processes that occur within both priced and nonpriced environments" (Ibid., 249). Hayek (1945) proposed that the price system functions as a means of communicating relevant information to socially distant individuals within the local and global economies. In this framework, each market participant does not require all available information in the global economy and merely needs the price; changes in price convey to market participants that the global conditions have changed in some general way and signal them to make corresponding changes in their own economic activities. Assuming

that the institutional environment does not distort prices and their transmission to countless market participants separated by geography and time, prices will enable consumers to signal to producers their desires and relative wants and the subsequent profits and losses will assist producers in identifying fruitful and worthless endeavors and the optimal combination of resources for specific productions. This individual-level decision-making (i.e. individual profit seeking and utility maximizing behavior) facilitates spontaneous adjustments to changing market conditions and massive social coordination at the society-level. Thus, to Chamlee-Wright and Storr (2015), learning therefore unavoidably takes place alongside decision-making. Whenever decisions are made, subjective expectations are confirmed or disappointed. This satisfaction or dissatisfaction of expectations will, in turn, encourage individuals to learn (i.e. to confirm or revise their mental interpretations of the world) and modify their actions. Eventually, this discursive and recursive learning performed by individuals will naturally lead to learning at the society-level and generate social phenomena. The quality of this social learning, then, will depend on the underlying social and economic institutions. While Chamlee-Wright and Storr (2015) paralleled the process by which individuals navigate socially embedded resources to social learning, they did not elaborate on how social information such as trustworthiness gets diffused in the market.<sup>13</sup>

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<sup>13</sup> Chamlee-Wright and Storr (2015) discussed creditworthiness and reputation as nonprice



As human beings, we care about cooperation and prefer to continue interacting with those who demonstrated their cooperativeness to us in the past. We also care about how our partners make their decisions to cooperate and their outwardly conduct while they make their decisions. Oftentimes, we tend to trust cooperators who did not strategically weigh the costs and benefits of cooperation and did not exert effort to collect such information before deciding whether to cooperate and tend to distrust those who did. In other words, our perception of an individual's level of trustworthiness depends on his transgressions as much as (if not more than) the damages caused by his transgressions and whether his decision to cooperate was made deliberately or intuitively.<sup>14</sup> The difficulty, as with other nonprice signals, is that trustworthiness cannot be explicitly and succinctly signaled to others: an individual could communicate that he is trustworthy, but by doing so, he would likely lessen (if not destroy) his trustworthiness; and stating that an exchange partner is trustworthy does not fully communicate one's experience and assessment of the partner to others. Hence, people must personally experience (to

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signals and how they mimic the market price system. Although trustworthiness is often operationalized as creditworthiness and reputation in mainstream economics, people colloquially use trustworthiness in a way that means more than just creditworthiness, reliability and credibility. For example, most people may have viewed Hitler to be credible (in his threats) and a man of his word, but likely would not have described him to be trustworthy nor honorable. In what follows, we will give an account of how others' trustworthiness can be discovered and learnt in the market that is, at the aggregate level, consistent with Chamlee-Wright and Storr's (2015) discussion of creditworthiness and reputation.

<sup>14</sup> See Hoffman, Yoeli and Nowak (2015) for a game theoretic model that incorporates motives underlying actions to examine why agents trust other agents who cooperate without calculating the costs (i.e. cooperate without looking).

some degree) each other to learn of their trustworthiness in the market as they would in the community.

Economic exchanges tend to have specific and known objectives; businesspersons meet to negotiate contracts and prices. Even in a bare bilateral negotiation process as depicted by game theorists, an agent could reveal his flexibility (or stubbornness), fairness, reasonability and empathy for his partners through the way in which he makes price offers. Partners can deduce and get a superficial sense of him through their observations of his offer-making strategy in this context.<sup>15</sup> When this negotiation process transpires in a richer context where formal communication and informal conversations occur, partners can gather even more social information about the individual and can form deeper and more mature sentiments for him. It is in these personal interactions where business partners can truly signal their trustworthiness (beyond being reliable to execute agreements and keeping promises) through his conduct inside and outside the negotiation. Learning of a partner's genuine trustworthiness (or untrustworthiness), a businessperson will subsequently adjust his expectations, actions and decisions to repeat (or terminate) interactions with this particular partner. Furthermore, over time, he may introduce a trustworthy partner to other trusted associates and establish a deeper friendship with his business partner. Conversely, he may warn his trusted associates

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<sup>15</sup> Although not directly addressed in their experiment, Choi and Storr (2015a) implies that individuals could form superficial or inarticulate opinions about trading partners' characters through bilateral market interactions.

away from the business partner and isolate him from his social network. Either way, strong social relationships based on trust and distrust can form in market settings that also have significance in society. In a non-market social space, individuals employ similar learning mechanisms to perceive, assess and react to others' demonstrated trustworthiness. While this explanation focuses on trustworthiness, it is also a complementary narrative to how people can learn to trust (for economic and social reasons) in markets and how small circles of trust emerge in environments with poor institutions.

In environments with well-functioning institutions, habits of trust and affirmations of others' trustworthiness shape how they trust and behave trustworthily to strangers. In an environment where affirmations of expectations are the norm, disappointments (or transgressions) are accentuated and have asymmetrically lasting impressions on partners; businesspeople regard profit losses to be rather mundane news, but pay acute attention to news of acts of betrayal and dishonesty committed by others. Therefore, businesspersons will continue behaving trustworthily. A paradox, however, arises when we consider genuine and fake trustworthiness. Untrustworthy businesspersons, seeing the economic and social success of the trustworthy, will seek to mimic their behavior. Yet, people care about and can detect whether a decision to cooperate was intuitive or deliberate. Those who mimic trustworthiness can simulate the success of the trustworthy and thus will seek to become better at disguising their deliberateness or will

become genuinely trustworthy themselves.<sup>16</sup> Either way, the market can enable individuals to discover and to socially learn to trust and to be trustworthy through market interactions.

#### 4. Conclusion

Some degree of trust is necessary for all social and economic exchanges. However, in the current economic literature on trust and markets, the focus has been on how trust facilitates market interactions and little to no attention has been given to the social economy of trust – how market activities, interactions and outcomes shape and are shaped by trust and trustworthiness. However, there are some exceptions. Herz and Taubinsky (2015) and Brandts and Riedl (2016) experimentally studied the spillover effects of the market into society. Combined, these studies implied that market experience matters: the former study found that market experience molded the subjects' fairness preferences; and the latter study found that competition *per se* does not destroy cooperation, but competition *against each other* does. Moreover, customer loyalty could be one mechanism through which price rigidity occurs in the market (Renner and Tyran 2004).

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<sup>16</sup> See Lewis (2008) for a fascinating discussion on trusting relationships as means of handling radical uncertainty and ignorance of the future and on how differential positions of authority in these relationships could contribute to an imbalance of reciprocity and give rise to relationships of dominance.

This paper argued how the market serves as a social space where people can learn to trust and about others' trustworthiness through market interactions. To make our case, we relied on the existing Austrian economic notions of the market as a discovery process (Hayek 1945; Lavoie 1986), the market as a social space (Storr 2008; Chamlee-Wright and Storr 2015) and heterogeneous social capital (Chamlee-Wright 2008). In the pursuit of self-interest, we contended, market participants reveal crucial inarticulate social information about themselves in face-to-face market interactions that their partners observe and take into account when forming assessments of each other's trustworthiness. This information is only realized from market interactions and exchanges; whether someone is worthy of our trust and whether we should trust cannot be answered from self-introspection and social isolation. Although we concentrated on the argument that markets are trust-promoting and trustworthiness-revealing, the ability to serve as a space to teach trust and trustworthiness is not unique to markets. Ultimately, intimate circles of trust can expand to include strangers because the market also regulates trust and trustworthiness, as it does with prices, demand and supply.

Choi and Storr (2015b) experimentally explored whether markets can serve as social spaces where individuals can learn to trust and whom to trust. They used a two-treatment, two-task design in which subjects bilaterally form price contracts in a market setting and then play trust games with their trading partners. The two treatments differed in one crucial way. While one market did not enforce any contracts, the other

enforced all contracts. More specifically, in the former treatment, subjects could defect on previously agreed upon contracts; or, alternatively stated, subjects had to purposefully decide to execute the contract in order to successfully trade. But, in the latter treatment, the market automatically executed all contracts. Results show that subjects can learn to trust and whom to trust in markets, but whether they learn depends on the type of market and on their trust game role. As second movers, subjects treated every partner equally across both treatments and only those partners who unquestionably demonstrated their trustworthiness in the treatment with defection were significantly rewarded. But as first movers, subjects trusted trustworthy partners and strangers equally across both treatments and punished the untrustworthy in the treatment with defection.

These results highlight two implications that speak to the market as an emergent process for trust and trustworthiness. First, market interactions do generate knowledge. In both treatments, markets permitted buyers and sellers to only negotiate in electronic price offers; these markets denied subjects from forming meaningful connections by strictly prohibiting rich conversations and face-to-face interactions. It is remarkable that subjects displayed and enjoyed noticeable differential trust and reciprocity in such sterile market environments. Second, well-functioning markets may not be adequate environments for individuals to learn to trust and whom to trust when the only form of communication is prices. This contradicts the narrowest interpretation of the market price mechanism as

information transmission. However, it is unclear whether prices are principally incapable of transporting knowledge about individual trustworthiness or whether the price mechanism must be combined with something else in order for prices to reflect individual trustworthiness.

## APPENDIX A: ROBUSTNESS TESTS

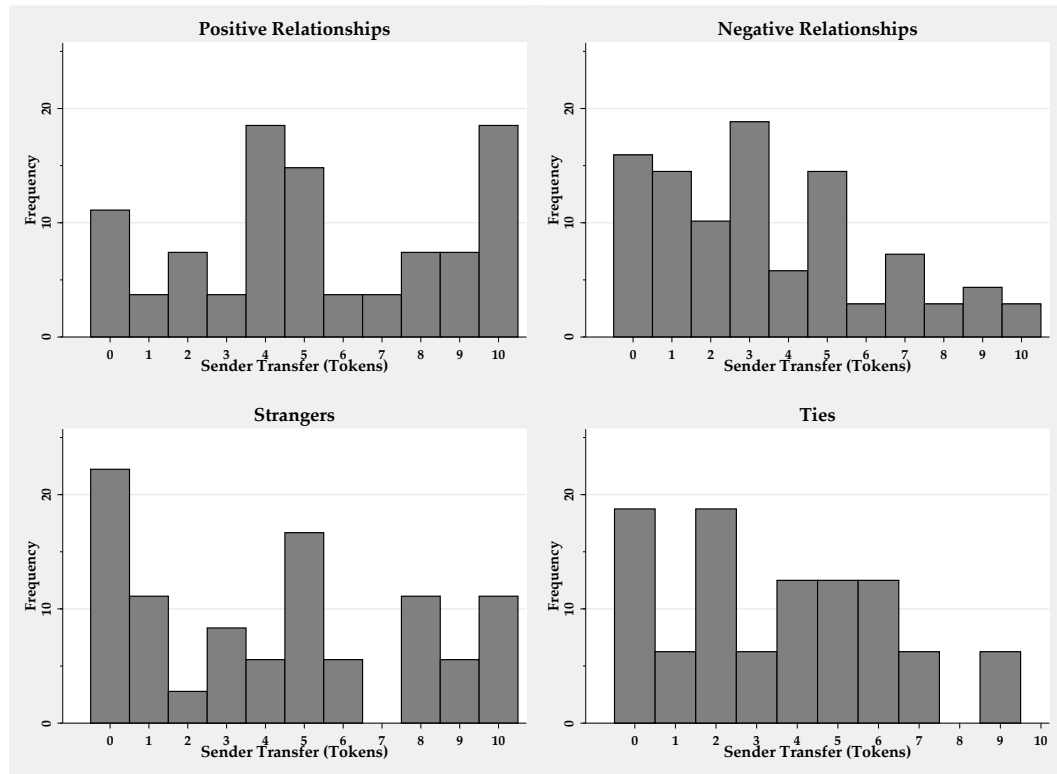
### *A1. Distribution of Transfers*

In our experiment, subjects earn more on net if they defect on trades than if they execute trades. Due to this “hostile” market environment, fewer positive relationships are observed compared to negative relationships. Yet examining underlying distributions of transfers by relationship type can provide further insight into our main findings that subjects behave more favorably towards those with whom they share positive relationships compared to those with whom they share negative relationships. Our results here hint that senders and responders’ behavior towards trusted individuals (i.e. positive relationships) is fundamentally dissimilar to that towards non-trusted individuals (i.e. negative and other relationships).

Pair-wise comparison of sender transfer distributions between positive and negative relationships reveal that they are statistically different ( $p$ -value = 0.014; two-sample Kolmogorov-Smirnov equality of distributions test). The distribution associated with positive relationships is also statistically different from those associated with other relationship types when these three types are grouped together ( $p$  = 0.041; two-sample Kolmogorov-Smirnov equality of distributions test). Indeed, distributions underlying



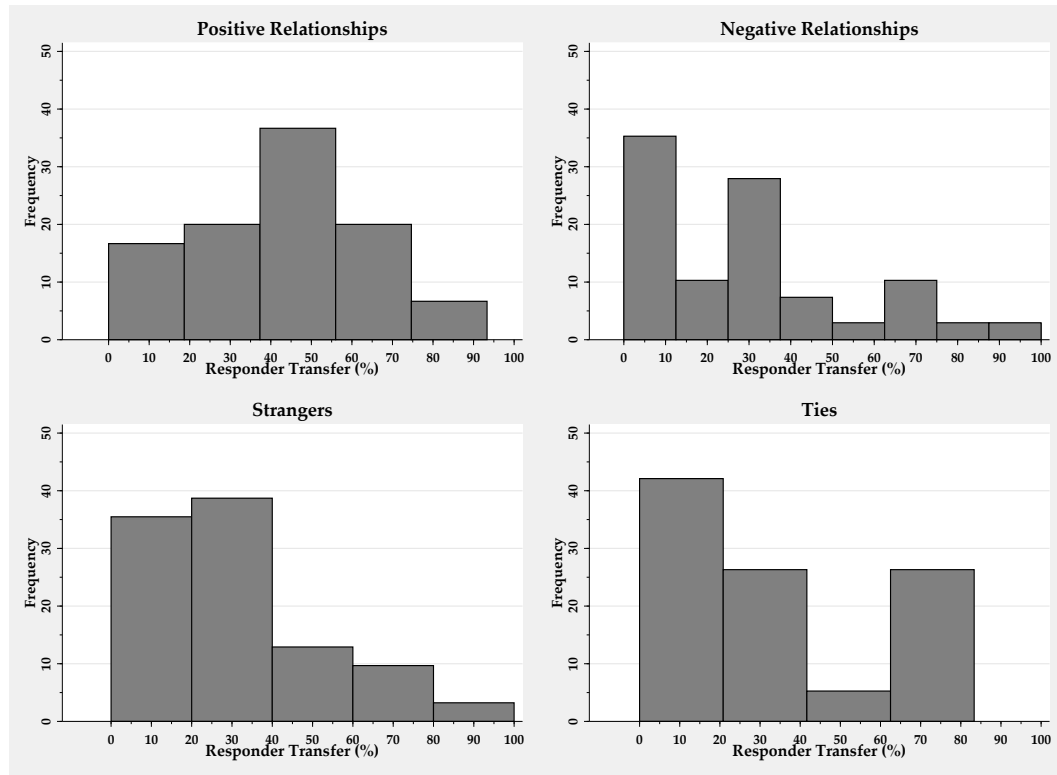
sender transfers in negative relationships, ties and strangers are statistically identical from each other ( $p > 0.36$ ; two-sample Kolmogorov-Smirnov tests).



**Figure A1: Distribution of Sender Transfers by Relationship Type**

Similar comparisons of distributions underlying responder transfers reinforce our key findings. Responder transfer distributions associated with positive and negative relationships are statistically different at the 1% level ( $p\text{-value} = 0.001$ ; two-sample Kolmogorov-Smirnov equality of distributions test). Comparing the distribution associated with positive relationships against that associated with negative relationships, ties and stranger as a group reveals they are statistically different ( $p = 0.001$ ; two-sample Kolmogorov-Smirnov equality of distributions test). Once again, the

three relationship types are statistically no different from each other in pair-wise comparisons ( $p > 0.78$ ; two-sample Kolmogorov-Smirnov equality of distributions tests).



**Figure A2: Distribution of Responder Transfers by Relationship Type**

#### *A2. A comment on gender*

In our experiment, 19 men and 15 women played the role of senders while 18 men and 16 women played the role of responders. Overall, females were less trusting than males (3.53 tokens versus 4.39 tokens), although they reciprocated with the statistically same back-transfers (30.39% versus 33.1%). Our analysis hinted that gender may, at worst, weaken our main results but does not explain our main results. We observed the same

dynamic across positive and negative relationships for men and women although the statistical significance of our tests varied across genders.

As senders, men and women transferred more when paired with someone with whom they had developed a positive relationship (6.38 and 4.43 tokens, respectively) than when paired with someone with whom they had developed a negative relationship (3.7 tokens and 3.08 tokens, respectively). As responders, men and women sent larger back-transfers when paired with someone with whom they had developed a positive relationship (49.24% and 34.86%, respectively) than when paired with someone with whom they had developed a negative relationship (28.22% and 28.88%, respectively). While men's behavior towards positive and negative relationships was significantly different (sender transfers  $p = 0.005$ ; responder transfers  $p = 0.011$ ), women treated positive and negative relationships similarly (sender transfers  $p = 0.246$ ; responder transfers  $p = 0.193$ ).

### *A3. T-Tests*

Statistical analysis performing pairwise comparisons of relationships types using t-tests supports our main results, Results 1 and 2.

**Table A1: Sender Behavior: Unpaired two-sided t-tests with unequal variances**

<i>Relationship Types</i>	Positive	Negative	Ties	Strangers
<b>Positive</b>				
<b>Negative</b>	-1.907** (0.729)			
<b>Ties</b>	-1.87* (0.937)	0.036 (0.756)		
<b>Strangers</b>	-1.065 (0.876)	0.842 (0.679)	0.806 (0.898)	

*Note:* Differences between sender transfer means are reported. Standard errors are reported in parentheses.

\*\*\* Significant at 1%

\*\* Significant at 5%

**Table A2: Responder Behavior: Unpaired two-sided t-tests with unequal variances**

<i>Relationship Types</i>	Positive	Negative	Ties	Strangers
<b>Positive</b>				
<b>Negative</b>	-14.447*** (5.399)			
<b>Ties</b>	-11.365 (8.209)	3.083 (7.681)		
<b>Strangers</b>	-14.94** (6.346)	-0.492 (5.661)	-3.574 (0.384)	

*Note:* Differences between responder transfer means are reported. Standard errors are reported in parentheses.

\*\*\* Significant at 1%

\*\* Significant at 5%

#### *A4. Regression Analysis*

Our main results rely on discrete relationship types – positive, negative, ties and strangers. Yet relationship types can be redefined as a continuous variable. In Tables A3 and A4, the variable, *Positive*, is the number of successful trades as a percentage of the total number of trades that occurred between a particular seller and buyer; hence it ranges between zero and 100. We excluded stranger relationships for these regressions, as we were interested in how marginal changes in *Positive* may affect sender and responder transfer sizes. As before, sender transfers are measured in tokens while responder transfers are calculated as percentages of the respective tripled sender transfers. Regression analysis here demonstrates the robustness of the *Positive* variable across specifications for both senders and responders.

#### *A5. Transfer Means by Relationship Type and Demographic Group*

Demographics do not seem to drive the observed sender and responder differences between positive and negative relationships. The dynamic between transfers made in positive relationships and those made in negative relationships remained the same in all demographic groups, although sender behavior by non-US citizens was a notable exception. Figures A3 to A8 displays sender and responder transfer means across all relationship types by gender, race and nationality.

Tables A5 and A6 display results from OLS regressions and Tables A7 and A8 display results from fixed effects model, both with standard errors clustered by subject. Top row of each table indicates the specific demographic for which the regression is performed.

*Positive vs Negative* is defined as a discrete variable that equals one if a subject shared a positive relationship with a particular trading partner and zero if a subject shared a negative relationship with a particular trading partner.

**Table A3: Sender Transfers on Continuous Relationship Variable and Demographic Information**

<b>Dependent Variable: Sender Transfers (Tokens)</b>	<b>(1) OLS</b>	<b>(2) OLS</b>	<b>(3) Fixed Effects</b>	<b>(4) Fixed Effects</b>
<b>Positive</b>	0.021*** (0.009)	0.022*** (0.009)	0.011** (0.005)	0.02** (0.01)
<b>Female</b>		-0.763 (0.931)		
<b>US Citizen</b>		1.609 (1.32)		
<b>White</b>		0.214 (0.97)		
<b>Female*Positive</b>				-0.005 (0.011)
<b>US Citizen*Positive</b>				-0.012 (0.011)
<b>White*Positive</b>				0.005 (0.012)
<b>Constant</b>	3.268** (0.474)	2.187** (1.095)	3.558*** (0.163)	3.675*** (0.16)
<b>Clustering?</b>	Yes	Yes	Yes	Yes
<b>R<sup>2</sup></b>	0.074	0.155	0.0742	0.059
<b>N</b>	112	105	112	105

*Note:* 36 stranger relationships were excluded from this analysis. Two senders chose not to provide their demographic information, so another 5 non-stranger relationships were omitted from regressions in columns (2) and (4). Standard errors clustered by subject are reported in parentheses.

\*\*\* Significant at 1%

\*\* Significant at 5%

**Table A4: Responder Transfers on Continuous Relationship Variable  
and Demographic Information**

<b>Dependent Variable: Responder Transfers (%)</b>	<b>(1) OLS</b>	<b>(2) OLS</b>	<b>(3) Fixed Effects</b>	<b>(4) Fixed Effects</b>
<b>Positive</b>	0.15*** (0.052)	0.162*** (0.055)	0.182*** (0.059)	0.06 (0.098)
<b>Female</b>		0.954 (8.389)		0.025 (0.126)
<b>US Citizen</b>		0.78 (8.889)		0.025 (0.12)
<b>White</b>		-4.11 (7.85)		0.225** (0.106)
<b>Female*Positive</b>				
<b>US Citizen*Positive</b>				
<b>White*Positive</b>				
<b>Constant</b>	27.549*** (4.07)	28.798*** (3.58)	26.425*** (2.067)	26.614*** (1.886)
<b>Clustering?</b>	Yes	Yes	Yes	Yes
<b>R<sup>2</sup></b>	0.053	0.062	0.053	0.05
<b>N</b>	117	113	117	113

*Note:* 31 stranger relationships were excluded from this analysis. A responder chose not to provide his/her demographic information, so another 4 non-stranger relationships were omitted from regressions in columns (2) and (4). Standard errors clustered by subject are reported in parentheses.

\*\*\* Significant at 1%

\*\* Significant at 5%



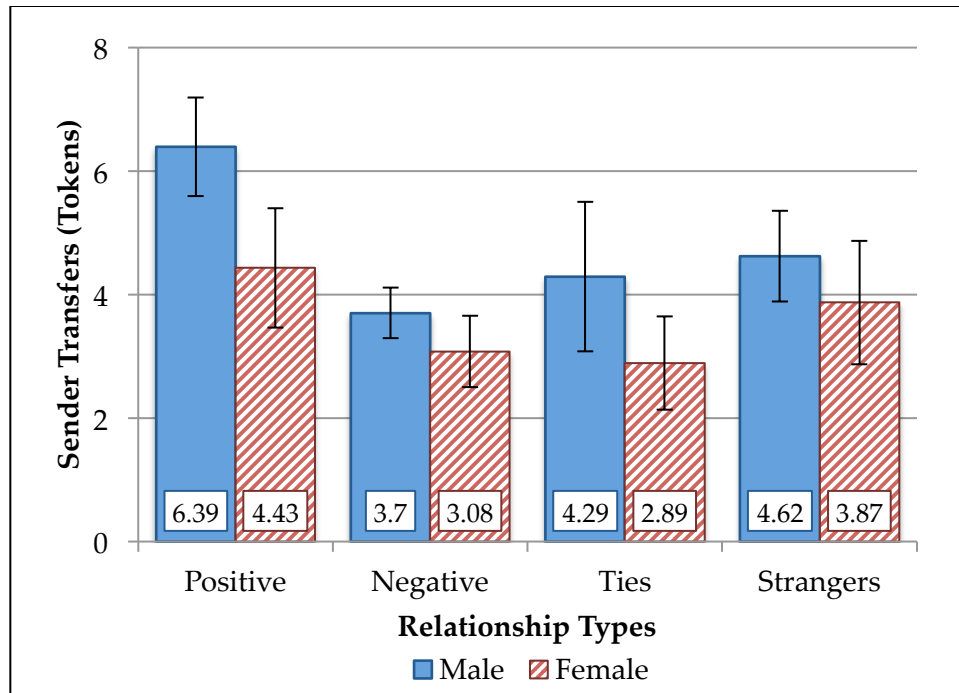


Figure A3: Sender Behavior by Gender

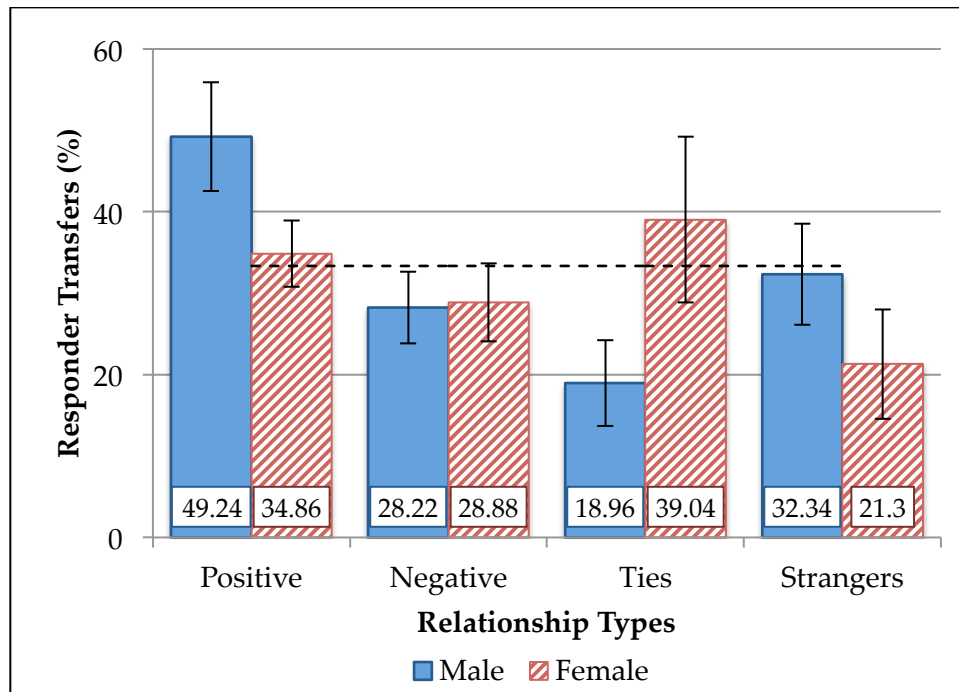
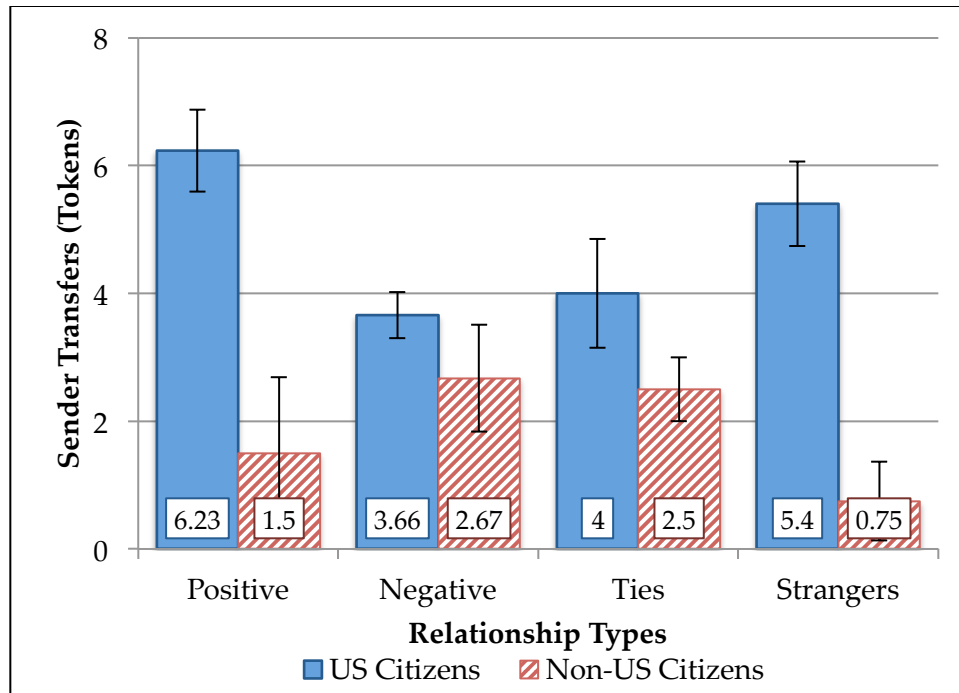
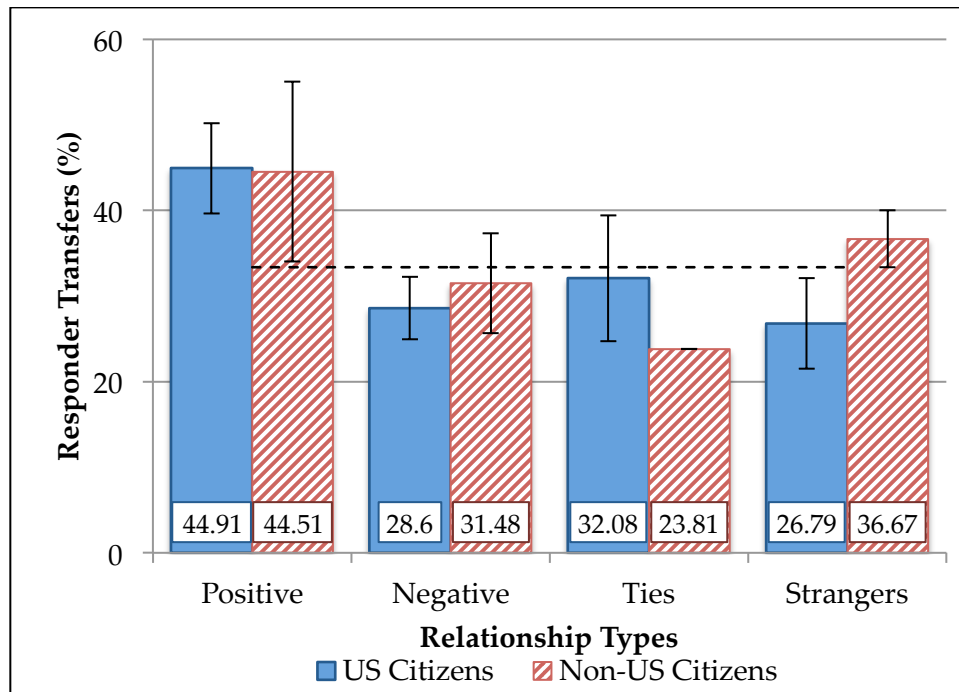


Figure A4: Responder Behavior by Gender



**Figure A5: Sender Behavior by Nationality**



**Figure A6: Responder Behavior by Nationality**

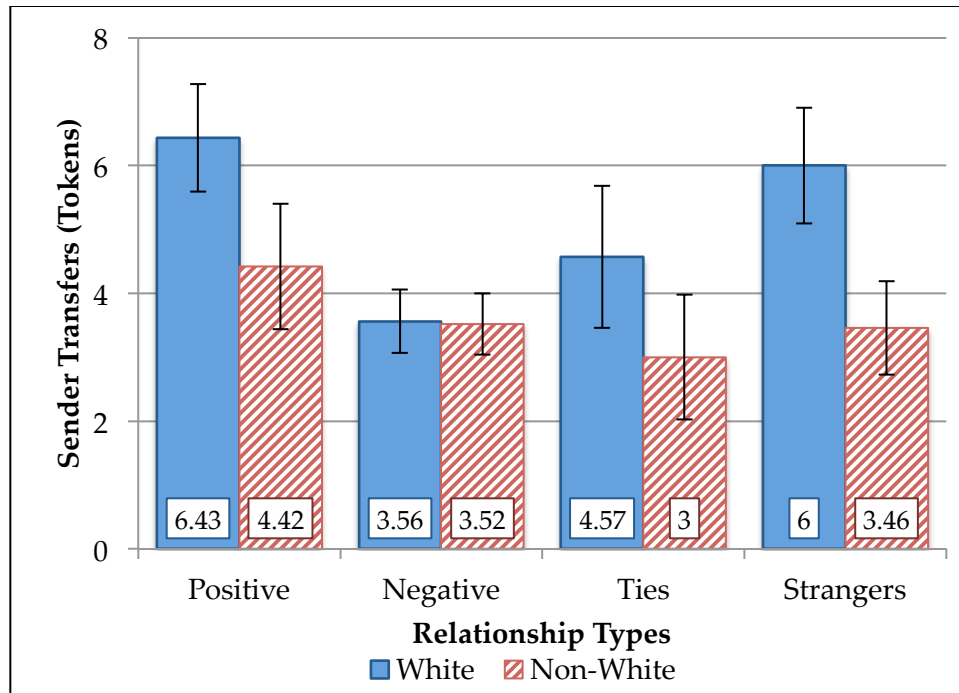


Figure A7: Sender Behavior by Race

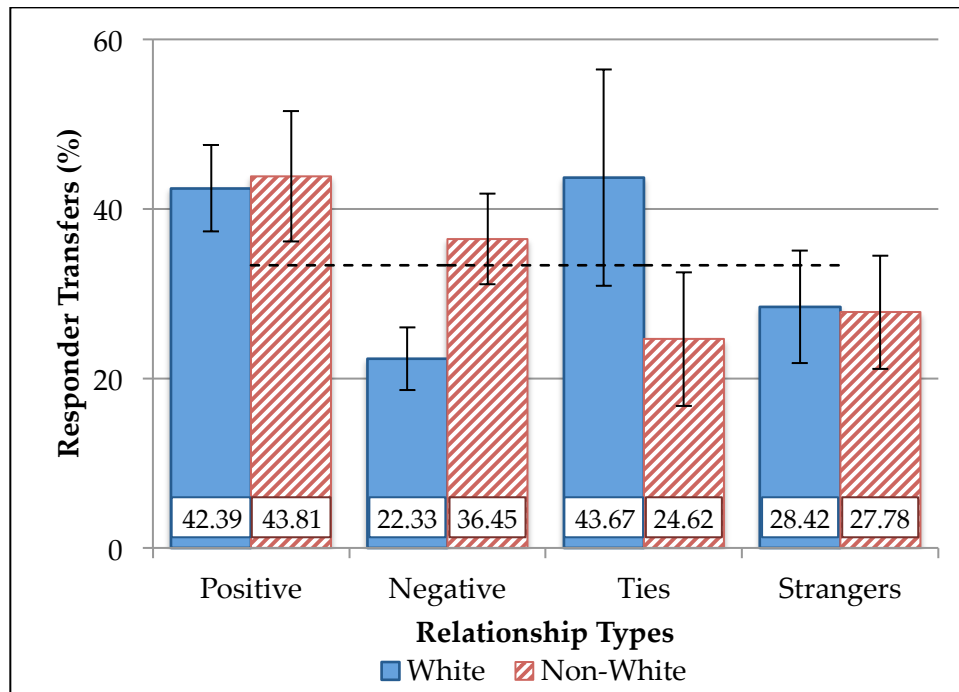


Figure A8: Responder Behavior by Race

**Table A5: OLS Regressions of Sender Transfers on *Positive vs Negative* by Demographic Group**

<b>Dependent Variable: Sender Transfers (Token)</b>	<b>(1) Female</b>	<b>(2) Male</b>	<b>(3) US Citizen</b>	<b>(4) Non-US Citizen</b>	<b>(5) White</b>	<b>(6) Non- White</b>
<b>Positive vs Negative</b>	1.352 (1.368)	2.687** (1.095)	2.567*** (0.871)	-1.167 (1.925)	2.87** (1.126)	0.902 (1.428)
<b>Constant</b>	3.077** (0.871)	3.698** (0.525)	3.55** (0.508)	2.667 (1.416)	3.559** (0.674)	3.515** (0.673)
<b>R<sup>2</sup></b>	0.041	0.151	0.156	0.036	0.022	0.019
<b>N<sub>POS</sub></b>	14	13	22	4	14	12
<b>N<sub>NEG</sub></b>	26	43	53	12	34	33

*Note:* No demographic controls were included in these regressions. Standard errors were clustered at the subject-level.

\*\*\* Significant at 1%

\*\* Significant at 5%

**Table A6: OLS Regressions of Responder Transfers on *Positive vs Negative* by Demographic Group**

<b>Dependent Variable: Responder Transfers (%)</b>	<b>(1) Female</b>	<b>(2) Male</b>	<b>(3) US Citizen</b>	<b>(4) Non-US Citizen</b>	<b>(5) White</b>	<b>(6) Non-White</b>
<b>Positive vs Negative</b>	5.975 (6.151)	21.992** (7.369)	16.314*** (5.54)	13.025 (13.15)	20.059** (7.318)	7.365 (5.819)
<b>Constant</b>	28.883*** (5.426)	28.216*** (6.248)	28.598*** (4.655)	31.482*** (6.289)	22.333*** (4.555)	36.446*** (6.669)
<b>R<sup>2</sup></b>	0.011	0.133	0.068	0.096	0.152	0.014
<b>N<sub>POS</sub></b>	13	17	21	6	17	13
<b>N<sub>NEG</sub></b>	35	33	58	9	38	30

*Note:* No demographic controls were included in these regressions. Standard errors were clustered at the subject-level.

\*\*\* Significant at 1%

\*\* Significant at 5%

**Table A7: Fixed Effects Regressions of Sender Transfers on *Positive vs Negative* by Demographic Group**

<b>Dependent Variable: Sender Transfers (Token)</b>	<b>(1) Female</b>	<b>(2) Male</b>	<b>(3) US Citizen</b>	<b>(4) Non-US Citizen</b>	<b>(5) White</b>	<b>(6) Non- White</b>
<b>Positive vs Negative</b>	0.794 (0.894)	1.2** (0.567)	0.921 (0.675)	1.24 (1.000)	1.067 (0.857)	0.844 (0.791)
<b>Constant</b>	3.272*** (0.313)	4.043*** (0.132)	4.143*** (0.198)	2.063*** (0.25)	4.085*** (0.25)	3.53*** (0.211)
<b>R<sup>2</sup></b>	0.041	0.151	0.156	0.036	0.168	0.019
<b>N<sub>POS</sub></b>	14	13	22	4	14	12
<b>N<sub>NEG</sub></b>	26	43	53	12	34	33

*Note:* No demographic controls were included in these. Standard errors were clustered at the subject-level.

\*\*\* Significant at 1%

\*\* Significant at 5%

**Table A8: Fixed Effects Regressions of Responder Transfers on *Positive vs Negative* by Demographic Group**

<b>Dependent Variable: Responder Transfers (%)</b>	<b>(1) Female</b>	<b>(2) Male</b>	<b>(3) US Citizen</b>	<b>(4) Non-US Citizen</b>	<b>(5) White</b>	<b>(6) Non-White</b>
<b>Positive vs Negative</b>	24.676*** (6.162)	16.862 (10.107)	22.687*** (6.153)	10.767 (21.582)	33.309*** (8.76)	12.186 (7.198)
<b>Constant</b>	23.818*** (1.669)	29.63** (3.437)	26.904*** (1.636)	32.385** (8.633)	18.237*** (2.708)	34.988*** (2.176)
<b>R<sup>2</sup></b>	0.011	0.133	0.068	0.096	0.152	0.014
<b>N<sub>POS</sub></b>	13	17	21	6	17	13
<b>N<sub>NEG</sub></b>	35	33	58	9	38	30

*Note:* No demographic controls were included in these regressions. Standard errors were clustered at the subject-level.

\*\*\* Significant at 1%

\*\* Significant at 5%

#### *A6. A comment on last interactions*

Our analysis suggests that a person's last interaction with a particular trader can affect the subsequent trusting behavior of individuals. This is understandable. Whether business partnerships end amicably or sourly when contracts expire may influence a person's view of his relationship with his former partner. If a person's overall experience with their partner was positive (i.e. it generated profits and was mostly pleasant) but the relationship ended on bad terms, he may subsequently categorize the relationship as negative and may not engage in future business with his former partner. A business

relationship ending on bad terms might also poison any non-business relationship that developed between the parties. A similar analogy could be made for friendships and family bonds that were largely positive but ended on poor terms.

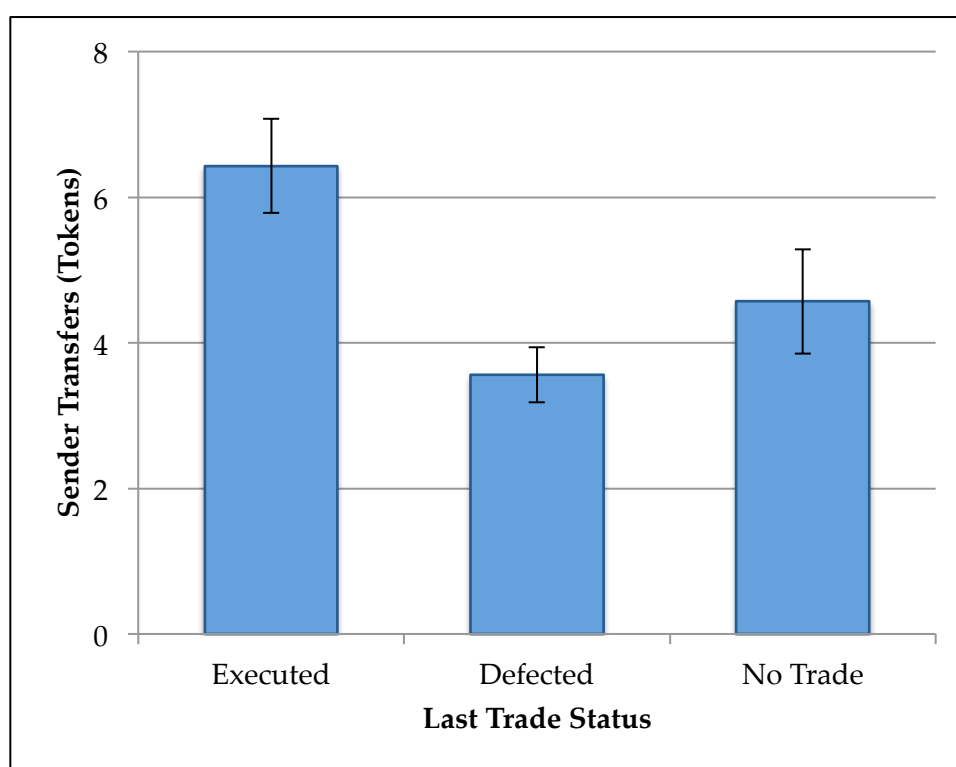
Senders transferred more to those with whom they experienced an executed trade in their last interaction than to those with whom they experienced a defected trade in their last interaction (5.33 tokens compared to 3.55 tokens; Mann-Whitney test  $p = 0.013$ ; Kruskal-Wallis test  $p = 0.05$ ). Statistically, behavior towards relationships defected (last) trades was no different from strangers (i.e. no trades), implying that subjects do not differentiate between negative and neutral sentiments in our environment (3.55 tokens compared to 4.31 tokens; Mann-Whitney test  $p = 0.35$ ).

Last interactions matter for responders. Responders transferred more to partners whom they experienced an executed trade in their last interaction (41.4% compared to 29.65%; Mann-Whitney test  $p = 0.025$ ; Kruskal-Wallis test  $p = 0.047$ ). Like senders, responders treated relationships with defected (last) trades no differently from strangers (30% compared to 28.07%; Mann-Whitney test  $p = 0.732$ ).



**Table A9: Sender Behavior by Last Trade Status**

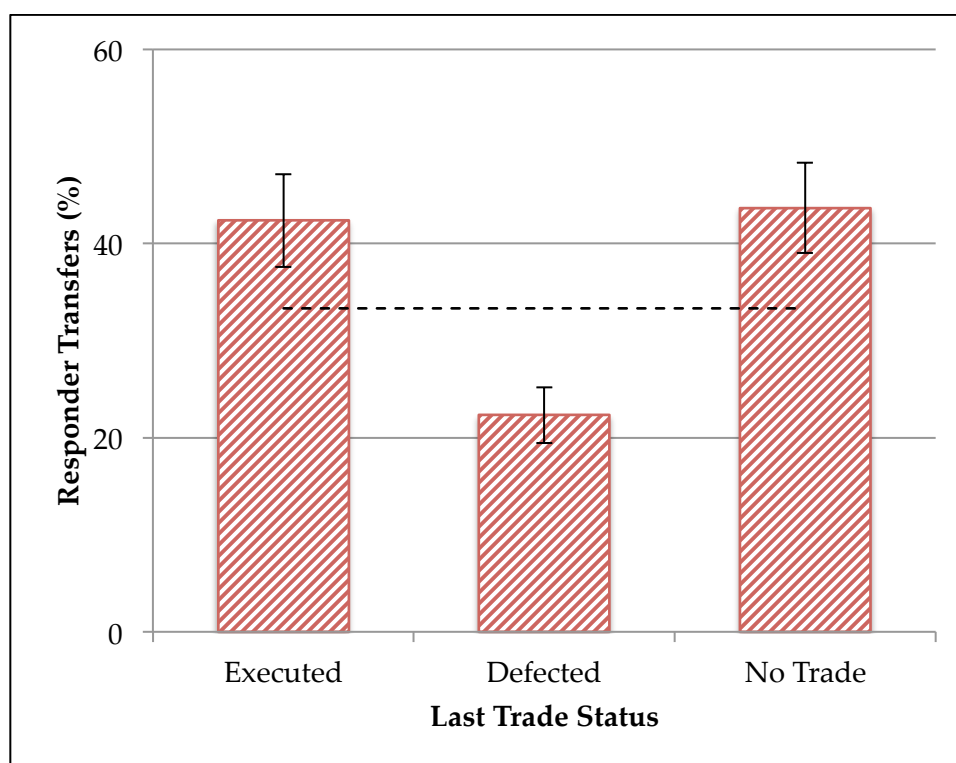
Last Trade Status	Observations	Transfer Average (Tokens)	Standard Error
Executed	24	5.33	0.65
Defected	88	3.55	0.38
No Trade (Strangers)	36	4.31	0.72



**Figure A9: Sender Behavior by Last Trade Status**

**Table A10: Responder Behavior by Last Trade Status**

Last Trade Status	Observations	Transfer Average (%)	Standard Error
Executed	31	41.4	4.79
Defected	86	29.65	2.88
No Trade (Strangers)	31	28.07	4.65



**Figure A10: Responder Behavior by Last Trade Status**

## APPENDIX B: INSTRUCTIONS FOR TRADING AND TRUST GAME

# WELCOME!

*Please turn off all electronic devices if you have not done so and place them in your bags or under your desk. Throughout the experiment, please do not talk to anybody else and there must be absolute silence. If you have any questions, please raise your hand and the experimenter will come to personally assist you.*

Thank you for participating in this experiment. By showing up on time, you have automatically earned a \$5 on-time payment. At the end of the study, you will be paid privately in cash.

## Experimental Name (i.e. Alias)

Today, you will be randomly assigned an alias by the computer at the beginning of the experiment. You will keep the same alias throughout today's experiment. Please do not share this alias with other participants. Your real name will never be revealed to anyone or recorded in this study and will only be known by your alias throughout this study.

## The Experiment

You will perform two tasks. These instructions will describe your First Task. Instructions for the Second Task will be provided to you after the First Task is finished.

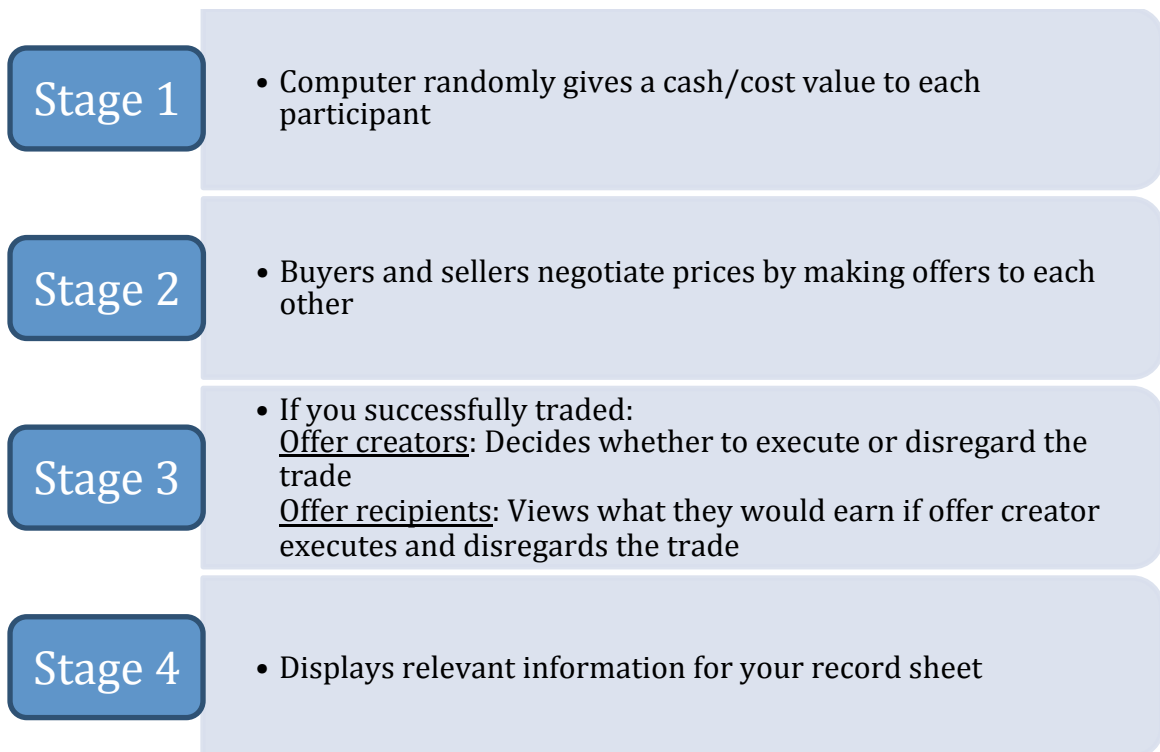
The experimenter will provide you with a record sheet before the start of the first paid round of each task. **After each round ends, make sure to fill out each column with the appropriate information.** These record sheets will be used during your final cash payment process at the end of the experiment, so please make sure to write legibly.

## First Task

### The Game

You will play a market game. There are two roles in this game – buyer and seller. You will play this game for 11 trading rounds (1 practice round and 10 paid rounds) and each trading round lasts 2.5 minutes. The market consists of 4 buyers and 4 sellers and you will be randomly assigned to one of these roles at the beginning of the first paid round. Your role will never change throughout this task.

*Flow Chart: Overview of what happens in each round*



At the beginning of each round, each buyer will be given some cash (in experimental dollars) and each seller will be given one unit of a good and a production cost. The buyer's objective is to purchase a unit of good from a seller at a price less than or equal to his cash. The seller's objective is to sell his good to a buyer at a price greater than or equal to his cost. This is achieved by negotiating: buyers can only make offers to sellers (e.g. "I would like to buy your good at the price of E\$54.") and sellers can only make

offers to buyers (e.g. "I would like to sell my good at the price of E\$54.") You can negotiate as many times with whomever you wish within a round. The only restrictions are (1) you can have at most one successful trade at the end of each round and (2) you can only have one open offer at a time. The next section will describe how you can accept, reject or withdraw offers.

Note that cash and cost values are your private information and no one will ever know your value. You will receive a new number at the beginning of each round. The computer will randomly choose a number between E\$10 and E\$100 and each value has an equal chance of being chosen.

In each trading round, you earn positive round profits by successfully trading with someone. When a buyer successfully purchases a good, his round profits is calculated as his cash minus the negotiated price. When a seller successfully sells his good, his round profits is calculated as the negotiated price minus his cost. If you do not successfully make a trade during a round, your round profits will be zero. But there is one other way with which you may earn zero profits.

Once a trade has successfully occurred, the person who sent the offer always has a choice to execute or disregard this trade. For example, suppose you are a seller and a buyer has accepted your offer. If you decide to execute this trade, both you and your trading partner will earn round profits as described in the above paragraph. But if you decide to disregard this trade, your round profit will be the negotiated price plus E\$10 while your partner's round profit will be zero. Similarly, suppose you are a buyer and a seller has accepted your offer. If you decide to disregard the trade, your round profit will be your cash plus E\$10 while your partner's round profit will be zero. (Again, both you and your partner will earn round profits as described above if you decide to execute this trade.)

The round ends when the computer displays your partner's name, his execute/disregard decision (if applicable) and your round profit. A new trading round will begin with everyone receiving a new cash or cost value. Any successful trades in previous trading rounds will not affect your subsequent round profits.

**Example:**

Consider a case where a buyer is endowed with E\$75 and a seller's cost value is E\$10. Suppose they successfully completed a trade and their negotiated trade price is E\$54.

- If the trade is executed, the buyer's round profit is  $E\$75 - E\$54 = \boxed{E\$21}$   
the seller's round profit is  $E\$54 - E\$10 = \boxed{E\$44}$
- Suppose the buyer made the offer and decided to disregard the trade.  
The buyer's round profit is  $E\$75 + E\$10 = \boxed{E\$85}$   
The seller's round profit is  $\boxed{E\$0}$
- Suppose the seller made the offer and decided to disregard the trade.  
The seller's round profit is  $E\$54 + E\$10 = \boxed{E\$64}$   
The buyer's round profit is  $\boxed{E\$0}$
- If this buyer and seller do not successfully trade with anyone, their round profits will be E\$0.

**Cash Payment from Second Task**

At the end of the experiment, one round will be randomly chosen to determine your cash payment from the First Task. Every 5 experimental dollars from this task will be worth 2 US dollars.

*Do not talk or indicate in any way to your fellow participants that may reveal your experimental identity.*

## How to Play the Game

### 1. How to make offers using Offer Creation box

As a buyer, you can only negotiate with sellers and likewise for sellers. To send an offer, enter a number next to “Your Offer” and select a specific participant as the recipient. (In the example on the right, the possible recipients are A, B, C and D.) When you are sure with your offer, click “Submit Offer.”

Remember your objective is to make a positive profit. As a buyer, your offer cannot be higher than the cash you hold.

As a seller, your offer cannot be lower than your cost. Besides these restrictions, you are allowed to make any offers.

However, you can only send one offer at a time. This means that any offer you send must first be either accepted or rejected by the recipient or withdrawn (i.e. cancelled by yourself) before you can send another offer.



The screenshot shows a web-based interface for creating an offer. It has a light gray background. At the top left, the text "Your offer:" is in bold. To its right is a blue rectangular input field with a vertical line inside. Below "Your offer:" is the text "To Buyer:" in bold. To its right are four radio buttons, each followed by a letter: A, B, C, and D. A white rectangular box is partially visible behind the radio buttons. Below these options, the text "Are you sure you want to permanently leave the market for this round?" is displayed, followed by two radio buttons labeled "Yes" and "No". At the bottom of the interface are two rectangular buttons: "Confirm Market Exit" and "Submit Offer".

## 2. How to identify offers using “Your Open Offers” Table

Your Open Offers			
From	To	Offer Price	Offer Status
A	You	34	Rejected by Recipient
F	You	74	Traded
You	D	59	Withdrawn
You	B	69	Open Offer

Accept Offer

Reject Offer

Withdraw Offer

Whenever you make and receive offers, these offers will appear in your open offers table. No one else in the room can ever see your offers. The “From” column displays the creators of offers (i.e. the person who sent the offer) and the “To” column displays the recipients of the offers. The “Offer Price” column displays the price proposed by the creators of the offers. For example, the first row of the table above shows an offer sent from Participant A to you for a proposed price of E\$34.

You can check the status of the offers by looking at the rightmost column. There are 5 possible statuses:

Open Offer	<p>If you sent this offer, it has not been accepted or rejected by the recipient.</p> <p>If you received this offer, you have not yet accepted or rejected this offer.</p>
Rejected by Recipient	This offer has been rejected by the recipient.
Traded	This offer has been accepted and a trade has successfully occurred.
Withdrawn	The creator of this offer has withdrawn the offer.
Offer Expired	The creator or recipient of this offer has successfully traded with someone else for this round.



Returning to the “Your Open Offers” table above, the “Offer Status” column shows that you have rejected an offer of E\$34 from Participant A and accepted an offer of E\$74 from Participant F.

### 3. How to reject and accept offers sent to you

When you receive offers, you can reject or accept them using the buttons located at the bottom of “Your Open Offers” table.

To reject an offer, first click on the offer price you want to reject. (The row will highlight blue.) Then click the “Reject” button. The status of the offer will then change from “Open Offer” to “Rejected by recipient.” You cannot reject your own offers.

Accepting an offer sent to you is a **3 step process**. *You must follow these steps in order to make sure your trade is properly recorded by the computer.*

- Click on the offer price you wish to accept. (The row will highlight blue.) Then click the “Accept” button. The status of the offer will change from “Open Offer” to “Traded.”
- Go to the Offer Creation box. Answer “Are you sure you want to permanently leave the market for this round?” with a “Yes” and click the “Confirm Market Exit” button.
- Click the red “Finished” button at the bottom of your screen.

*You can only accept one offer per round. In other words, you can successfully trade once per round.*

### 4. How to identify who has left the market

At some point, you may want to find out who has left the market either because you have been waiting on a recipient to respond (i.e. accept or reject) your offer or because you want to make a new offer to a

Buyers who have left the market	
Buyer's Name	Market Status

new recipient. You can check who has left the market by looking at the “Buyers/Sellers who have left the market” table such as the one seen below. During the task, buyers will only see sellers’ aliases in this table and, similarly, sellers will only see buyers’ aliases.

## **5. Withdrawing offers you have sent**

During the game, you may want to withdraw the offers you have sent. In order to do so, click on the relevant offer price and click the “Withdraw button.”

Unfortunately, due to the limitations of the software, you must also withdraw the offer you have sent if its status changes to “Offer Expired” or “Rejected by Recipient” if you want to continue making offers. *This means that you must withdraw the offers you have sent first before you use the “Offer creation” box to make another offer.*

## **6. As an offer creator, how to execute or disregard a trade**

Once the negotiation stage is over, the computer will move you onto a new decision screen if you were able to successfully trade. On this screen, offer creators are asked whether or not they wish to execute the trade and the computer lists the profits you could earn if you execute the trade and if you disregard the trade. More specifically, the computer will give a seller an “opportunity to decide whether or not you will deliver the good after receiving payment” and will give a buyer an “opportunity to decide whether or not you will pay your partner after he delivers the good.”

Answer the question, “Would you like to deliver the good after you receive payment?” / “Would you like to pay your partner after you receive the good?” with a “Yes” if you wish to execute (i.e. go through with) the trade and with a “No” if you wish to disregard (i.e. not go through with) the trade. After you are confident with your answer, you must click the “Continue” button at the bottom of the screen.

Offer recipients will see what they could earn if their partner executes the trade and if he disregards the trade, but will not be asked to make the execute/disregard decision.

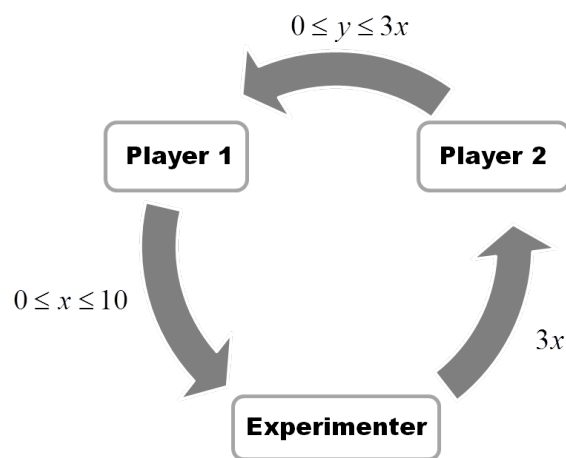
If you were not able to successfully trade with no one, the computer will simply show you a screen that states you did not trade with anyone.

## Second Task

### The Game

There are two roles of players in this game – Player 1 and Player 2. You will each be randomly assigned to one of these two roles and will then play this game with 4 players in the other role. Every player will be endowed with 10 tokens at the beginning of the game for each paired partner.

First, Player 1 will be given the opportunity to transfer some, all or none of his 10 tokens



to Player 2. (Player 1's transfer is represented by  $x$  in the diagram.)

Then, the experimenter will multiply  $x$  by 3 before it is sent to Player 2.

Second, Player 2 will observe Player 1's tripled transfer and then have an opportunity to transfer some, all or none of this amount back to Player 1. (Player 2's transfer is represented by  $y$  in the diagram.) To minimize confusion, the computer will only display the

tripled transfer on Player 2's decision screen.

The game then ends once Player 2 completes her transfer.

As Player 1, each of your transfers must be between and including 0 and 10 tokens. As Player 2, each of your transfers must be less than or equal to the tripled transfer sent by your respective Player 1.

## Your Token Earnings

For each of your partners, your earnings will be calculated by the computer and will be privately displayed on your screen. For your information, your earnings will be calculated in the following way.

Player 1's round earnings are the endowment of 10 tokens minus the number of tokens sent to Player 2 plus the number of tokens sent back by Player 2. (Alternatively, it is expressed as

$$10 - x + y.)$$

Player 2's round earnings are his endowment of 10 tokens plus the number of tokens sent by Player 1 minus the number of tokens sent back to Player 1. (Alternatively, it is expressed as  $10 + 3x - y.$ )

### Example 1

Suppose Player 1 transfers 2 tokens to Player 2:  $x = 2 \text{ tokens}$

Before this transfer reaches Player 2, it is tripled by the experimenter:  $3x = 6 \text{ tokens}$

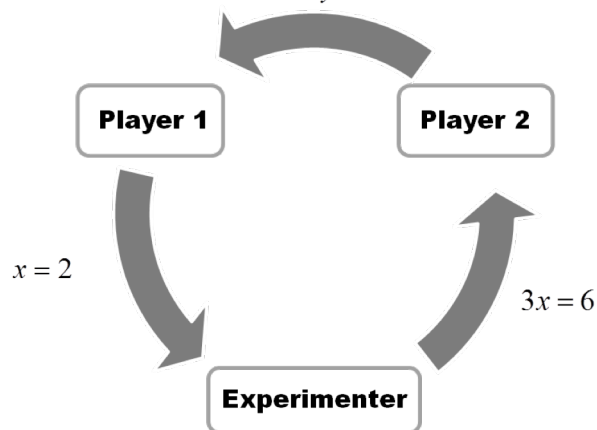
Then, Player 2 can send any amount between and including 0 and 6 tokens back to Player 1.

If Player 2 decides to send back 3 tokens, Player 1 will earn:

$$10 - 2 + 3 = \boxed{11 \text{ tokens}}$$

$$\text{Player 2 will earn: } 10 + 6 - 3 = \boxed{13 \text{ tokens}}$$

$$0 \leq y \leq 6$$



### Example 2

Suppose Player 1 transfers 9 tokens to Player 2:  $x = 9$  tokens

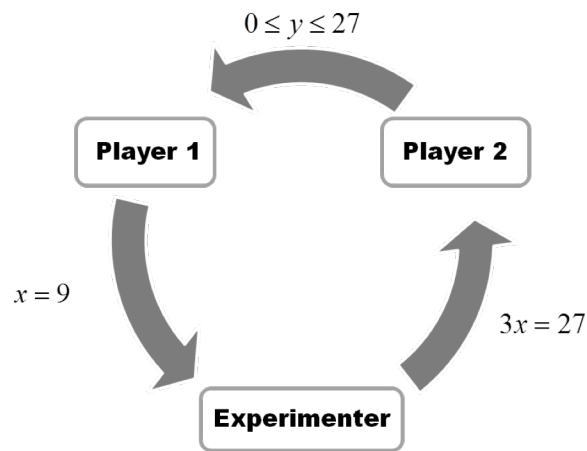
Before this transfer reaches Player 2, it is tripled by the experimenter:  $3x = 27$  tokens

Then, Player 2 can send any amount between and including 0 and 27 tokens back to Player 1.

If Player 2 decides to send back 19 tokens, Player 1 will earn:

$$10 - 9 + 19 = \boxed{20 \text{ tokens}}$$

$$\text{Player 2 will earn: } 10 + 27 - 19 = \boxed{18 \text{ tokens}}$$



### Details about this Game

- You will play this game once with each of your 4 partners. This means that you will be endowed with 10 tokens for each partner. If you are Player 1, each of your transfers must be between and including 0 and 10 tokens and may not exceed 10 tokens.
- All 4 games will all be played simultaneously.
- All of your interactions are private. This means that no one but you and your paired partner will ever know the results of your private interaction. (For example, if you are partnered with Justin and Andrew, only you and Justin will know the results of your private interaction. Likewise, only you and Andrew will know the results of your private interaction. Justin will never find out your decision for Andrew and vice versa. Similarly, you will never know the results of Justin and Andrew's private interaction.)

- **There will be no practice rounds for this task.** For your reference, sample screenshots will be provided for you after the experimenter finishes reading these instructions.
- *Again, remember to fill out your record sheet at the end of each round. This record sheet will be used during your final cash payment process at the end of the experiment.*

### **At the end of this Task**

The computer will display some questions on your screen as part of the post-experiment survey. Please answer these questions to the best of your ability. The rest of the post-experiment survey will be provided to you by the experimenter after this task is finished.

### **Cash Payment from the Second Task**

At the end of the experiment, a partner will be randomly chosen and you will be paid according to how much you earned while being paired to this partner. Your token earnings will be converted using an exchange rate of 1 US dollar to 3 tokens.

*Do not talk or indicate in any way to your fellow participants that may reveal your experimental identity.*

## APPENDIX C: POST-EXPERIMENT EXIT SURVEY

### Survey

Thank you for participating in this experiment. Please take the time to answer the following questions to the best of your ability. Remember your name will never be revealed to anyone and your survey answers cannot be traced back to your name. Your answers will be used for this study only.

**1. What is your age?**

**2. What is your gender?**

Female

Male

**3. What is your major at George Mason University?**

(a) Accounting      (b) Biology      (c) Business Administration and Management

(d) Communications   (e) Economics   (f) Psychology

(g) Others (Please specify): \_\_\_\_\_

**4. Which year are you in your current program at George Mason University?**

(a) Freshman      (b) Sophomore      (c) Junior

(d) Senior      (e) Graduate Student   (f) Other (Please specify): \_\_\_\_\_

**5. What is your country of citizenship?**

**6. What do you consider your racial or ethnic background to be? (You may circle more than one category)**

(a) Caucasian/White   (b) African-American/Black   (c) Latin American/Hispanic

(d) South Asian   (e) Far/South-eastern Asian

(f) Others (Please specify): \_\_\_\_\_

**7. Have you participated in an economic experiment prior to today's experiment?**

YES

NO

**8. Regarding your fellow participants today, how many of them did you personally know prior to this experiment?**

0

1

2

3 or more

**If so, which of these best describes your relationship? (E.g. Friend, acquaintance, family, etc.)**



**9. Please help us better understand your decisions. How did you make them in the First and Second Tasks?**

10. On the next page, you will see a list of 10 decisions. Each decision will be a paired choice between "Option A" and "Option B," just you see on the next page. Your task is to determine whether you prefer the lottery represented by Option A or the lottery represented by Option B for each decision row. But only one of them will be used in the end to determine your earnings. Before you start making your ten choices, please let me explain how these choices will affect your earnings for this part of the experiment. Please note that you will only be paid for this part of the experiment if and only if you complete this survey.

A 10-sided die that will be used to determine payoffs; the faces are numbered from 1 to 10 (the "0" face of the die will serve as 10.) After you have made all of your choices and survey, we will throw this die twice in the room next door: once to select one of the ten decisions to be used and a second time to determine what your payoff is for the option you chose, A or B, for the particular decision selected. Even though you will make 10 decisions, only one of these will end up affecting your earnings, but you will not know in advance which decision will be used. Obviously, each decision has an equal chance of being used in the end.

For example, please look at Decision Row 1 in the table. Option A will pay \$2.00 with 10% chance and it will pay \$1.60 with 90% chance. Option B will yield \$3.85 with 10% chance and it will pay \$0.10 with 90% chance. As another example, please look at Decision Row 2. Option A will pay \$2.00 with 20% chance and it will pay \$1.60 with 80% chance. Option B will yield \$3.85 with 20% chance and it will pay \$0.10 with 80% chance.

The other decisions are similar, except that as you move down the table, the chances of the higher payoff for each option increase. In fact, as you will see in the next screen, Decision Row 10 will yield the highest payoff for sure, so your choice will be between \$2.00 and \$3.85.

For each decision row, you must choose between Option A and Option B. You may choose A for some decisions rows and B for other rows. Once you make a decision, you will make check marks in the middle of the table to represent your choices. Check the box on the left for A or the box on the right for B.

Please raise your hand if you have any questions.

Option A		Option B	
<b>1/10</b> of \$2.00, <b>9/10</b> of \$1.60	<input type="text"/>	<input type="text"/>	<b>1/10</b> of \$3.85, <b>9/10</b> of \$0.10
<b>2/10</b> of \$2.00, <b>8/10</b> of \$1.60	<input type="text"/>	<input type="text"/>	<b>2/10</b> of \$3.85, <b>8/10</b> of \$0.10
<b>3/10</b> of \$2.00, <b>7/10</b> of \$1.60	<input type="text"/>	<input type="text"/>	<b>3/10</b> of \$3.85, <b>7/10</b> of \$0.10
<b>4/10</b> of \$2.00, <b>6/10</b> of \$1.60	<input type="text"/>	<input type="text"/>	<b>4/10</b> of \$3.85, <b>6/10</b> of \$0.10
<b>5/10</b> of \$2.00, <b>5/10</b> of \$1.60	<input type="text"/>	<input type="text"/>	<b>5/10</b> of \$3.85, <b>5/10</b> of \$0.10
<b>6/10</b> of \$2.00, <b>4/10</b> of \$1.60	<input type="text"/>	<input type="text"/>	<b>6/10</b> of \$3.85, <b>4/10</b> of \$0.10
<b>7/10</b> of \$2.00, <b>3/10</b> of \$1.60	<input type="text"/>	<input type="text"/>	<b>7/10</b> of \$3.85, <b>3/10</b> of \$0.10
<b>8/10</b> of \$2.00, <b>2/10</b> of \$1.60	<input type="text"/>	<input type="text"/>	<b>8/10</b> of \$3.85, <b>2/10</b> of \$0.10
<b>9/10</b> of \$2.00, <b>1/10</b> of \$1.60	<input type="text"/>	<input type="text"/>	<b>9/10</b> of \$3.85, <b>1/10</b> of \$0.10
<b>10/10</b> of \$2.00, <b>0/10</b> of \$1.60	<input type="text"/>	<input type="text"/>	<b>10/10</b> of \$3.85, <b>0/10</b> of \$0.10

## REFERENCES

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- Adler, P., Kwon S.-W., 2002. Social Capital: Prospects For a New Concept. *The Academy of Management Review*, 27, 17-40.
- Aghion, P., Algan, Y., Cahuc, P., Shleifer, A., 2010. Regulation and Distrust. *The Quarterly Journal of Economics* 125(3), 1015-1049
- Aimone, J., Houser, D., 2011. Beneficial betrayal aversion. *PLoS ONE* 6(3), e17725. doi:10.1371/journal.pone.0017725.
- Akerlof, G. A., 1982. Labor Contracts as Partial Gift Exchange. *The Quarterly Journal of Economics*, 97(4), 543-569.
- Al-Ubaydli, O., Houser, D., Nye, J., Paganell, M., Pan, X., 2013. The causal effect of market priming on trust: An experimental investigation using randomized control. *PLOS One* 8(3), e55968. doi:10.1371/journal.pone.0055968.
- Alesina, A., La Ferrara, E., 2000. The Determinants of Trust. NBER Working Paper N. 7621.
- Algan, Y., Cahuc, P., 2010. Inherited Trust and Growth. *American Economic Review*, 100(5): 2060-92.
- Algan, Y., Cahuc, P., 2014. Trust, Growth, and Well-Being: New Evidence and Policy Implications. *Handbook of Economic Growth*, in: *Handbook of Economic Growth*, edition 1, volume 2, chapter 2, pages 49-120 Elsevier.
- Anderson, E. 2003. *A Place on the Corner*, 2d ed. Chicago: University of Chicago Press.
- Andreoni, J., 1995. Warm-Glow versus Cold-Prickle: The Effects of Positive and Negative Framing on Cooperation in Experiments. *Quarterly Journal of Economics* 110(1), 1-21.

- Annen, K., 2001. Inclusive and exclusive social capital in the small-firm sector in developing countries. *Journal of Institutional and Theoretical Economics* 157, 319–330.
- Argell, J., Lundborg, P., 1995. Theories of Pay and Unemployment: Survey Evidence from Swedish Manufacturing Firms. *Scandinavian Journal of Economics* 97(2), 295-307.
- Argyle, M., Henderson, M., 1985. *The Anatomy of Relationships: And the Rules and Skills Needed to Manage Them Successfully*. London: Penguin.
- Arrow, K., 1972. Gifts and Exchange. *Philosophy and Public Affairs* 1, 343-362.
- Arrow, K., 2000. Observation on social capital. In: Dasgupta, P., Serageldin, I. (Eds.). *Social capital: A multifaceted perspective*. Washington, DC: World Bank, 3-5.
- Bandelj, N., 2012. Relational Work and Economic Sociology. *Politics and Society* 40(2), 175-201.
- Banfield, E., 1958. *The Moral Basis of a Backward Society*. New York: Free Press.
- Barney, J. B., Hansen, M. H., 1994. Trustworthiness as a source of competitive advantage. *Strategic Management Journal*, 15, 175-190.
- Barr, A., Ensminger, J., Johnson, J. C., 2009. Social Networks and Turst in Cross-Cultural Economic Experiments. In: Cook, K., Levi, M., Hardin, R. (Eds.). *Whom Can We Trust?*. New York: Russell Sage Foundation, 65-90.
- Baum, J., Oliver, C., 1992. Institutional Embeddedness and the Dynamics of Organizational Populations. *American Sociological Review* 57(4), 540-559.
- Becchetti, L., Pelloni, A., Rossett, F., 2008. Relational Goods, Sociability, and Happiness. *Kyklos* 61(3), 343-363.
- Ben-Ner, A., Halldorsson, F., 2010. Trusting And Trustworthiness: What are They, How to Measure Them, and What Affects Them. *Journal of Economic Psychology* 31(1), 64-79.
- Berg, J., Dickhaut, J., McCabe, K., 1995. Trust, reciprocity and social history. *Games*

- and *Economic Behavior* 10, 122-142.
- Berggren, N., Jordahl, H., 2006. Free to trust: Economic freedom and social capital. *Kyklos* 59(2), 141-169.
- Berman, E., West, J., Richter Jr., M., 2002. Workplace Relations: Friendship Patterns and Consequences (According to Managers). *Public Administration Review* 62(2), 217-230.
- Bewley, T. F., 1995. A Depressed Labor Market as Explained by Participants. *American Economic Review Papers and Proceedings* 85, 250-254.
- Bicchieri, C., 2006. *The Grammar of Society: The Nature and Dynamics of Social Norms*. New York: Cambridge University Press.
- Bicchieri, C., Xiao, E., 2009. Do the right thing: But only if others do so. *Journal of Behavioral Decision Making* 22(2), 191-208.
- Binzel, C., Fehr, D., 2009. How social distance affect trust and cooperation: Experimental evidence from a slum. Working paper.
- Blinder, A. S., Choi, D. H., 1990. A Shred of Evidence on Theories of Wage Stickiness. *The Quarterly Journal of Economics* 105, 1003-15.
- Boettke, P. J., 2001. Why Culture Matters: Economics, Politics, and the Imprint of History. In: Boettke, P. J. *Calculation and Coordination: Essays on Socialism and Transitional Political Economy*. New York: Routledge, 248-265.
- Boettke, P. J., Storr, V. H., 2002. Post Classical Political Economy: Polity, Society and Economy in Weber, Mises and Hayek. *American Journal of Economics and Sociology* 61, 161-191.
- Bohnet, I., Greig, F., Hermann, B., Zeckhauser, R., 2008. Betrayal Aversion: Evidence from Brazil, China, Oman, Switzerland, Turkey and the United States. *The American Economic Review* 98(1), 294-310.
- Bohnet, I., Zeckhauser, R., 2004. Trust, Risk and Betrayal. *Journal of Economic Behavior & Organization* 55(4), 467-484.
- Bourdieu, P., 1986. The Forms of Capital. In: J. Richardson, J. (Ed.) *Handbook of*

- Theory and Research for the Sociology of Education. New York: Greenwood, 241-258.
- Bowles, S., 1998. Endogenous Preferences: The Cultural Consequences of Markets and Other Economic Institutions. *Journal of Economic Literature* 36, 75-111.
- Brandts, J., Riedl, A., 2016. Market Competition and Efficient Cooperation. CESifo Working Paper Series No. 5694. Available at SSRN: <http://ssrn.com/abstract=2731096>.
- Brann, P., Foddy, M., 1987. Trust and the Consumption of a Deteriorating Common Resource. *Journal of Conflict Resolution* 31(4), 615-630.
- Brennan, J., 2016. Do Markets Corrupt? Baker, J. A., White, M. D. (Eds.). *Economics and Virtues: Building a New Moral Foundation*. Oxford: Oxford University Press, 236-256.
- Bridge, K., Baxter, L., 1992. Blended relationships: Friends as work associates. *Western Journal of Communication* 56, 200-225.
- Buchan, N., Croson, R., Dawes, R., 2002. Swift neighbors and persistent strangers: A cross-cultural investigation of trust and reciprocity in social exchange. *The American Journal of Sociology* 108, 168-206.
- Burke, R., 1984. Mentors in Organization. *Group and Organization Studies* 9, 353-372.
- Burks, S., Carpenter, J., Verhoogen, E., 2003. Playing both roles in the trust game. *Journal of Economic Behavior & Organization* 51, 195-216.
- Butcher, K., Sparks, B., O'Callaghan, F., 2002. On the nature of customer-employee relationships. *Marketing Intelligence & Planning* 20(5), 297-306.
- Camerer, C., 2003. *Behavioral Game Theory: Experiments in Strategic Interaction*. Princeton: Princeton University Press.
- Camerer, C., Weigelt, K., 1988. Experimental tests of a sequential equilibrium reputation model. *Econometrica* 56(1), 1-36.
- Chamlee-Wright, E., 1997. *The Cultural Foundations of Economic Development*:



- Urban Female Entrepreneurship in Ghana. Abingdon-on-Thames: Routledge.
- Chamlee-Wright, E., 2008. The Structure of Social Capital: An Austrian Perspective on its Nature and Development. *Review of Austrian Economics* 20(1), 41-58.
- Chamlee-Wright, E., Myers, J. A., 2008. Discovery and Social Learning in Non-Priced Environments: An Austrian View of Social Network Theory. *Review of Austrian Economics* 21(2-3), 151-166.
- Chamlee-Wright, E., Storr, V., H., 2009. Club Goods and Post-Disaster Community Return. *Rationality & Society* 21(4), 429-458.
- Chamlee-Wright, E., Storr, V., H., 2010. The Role of Social Entrepreneurship in Post-Katrina Community Recovery. *International Journal of Innovation and Regional Development* 2(1/2), 149-164.
- Chamlee-Wright, E., Storr, V., H., 2011. Social Capital, Lobbying and Community-Based Interest Groups. *Public Choice* 149, 167-185.
- Chamlee-Wright, E., Storr, V., H., 2015. Social Economy as an Extension of the Austrian Research Program. In: Boettke, P. J., Coyne, C. J. (Eds.). *The Oxford Handbook of Austrian Economics*. Oxford: Oxford University Press, 247-271.
- Choi, S. Y., Storr, V. H., 2015a. The Emergence of Social Relationships in Markets: An Experimental Analysis. Working paper.
- Choi, S. Y., Storr, V. H., 2015b. Learning Whom to Trust: An Experiment on Trustworthiness and Social Relationships in Personal Markets. Working paper.
- Choi, S. Y., Storr, V. H., 2016. Can Trust, Reciprocity and Friendship Survive Contact with the Market? *Economics and the Virtue: Building a New Moral Foundation*. Oxford: Oxford University Press.
- Coleman, J., 1988a. Free Riders and Zealots: The Role of Social Networks. *Sociological Theory* 6(1), 52-57.
- Coleman, J. S., 1988b. Social capital in the creation of human capital. *American Journal of Sociology* 94, S95-121.
- Conlin, M., Lynn, M., O'Donoghue, T., 2003. The norm of restaurant tipping. *Journal*

- of Economic Behavior & Organization 52(3), 297-321.
- Cook, K. S., 2001. *Trust in Society*. New York: Russell Sage Foundation Publications.
- Cox, J., 2004. How to Identify Trust and Reciprocity. *Game and Economic Behavior* 46, 260-281.
- Croson, R., Buchan, N., 1999. Gender and Culture: International Experimental Evidence from Trust Games. *American Economic Association Papers and Proceedings* 89(2), 386-391.
- Dasgupta, P., 1988. Trust as a Commodity. In: Gambetta, D. (Ed.). *Trust: Making and Breaking Cooperative Relations*. Oxford: Basil Blackwell, 49-72.
- Deci, E., Koestern, R., Ryan, R., 1999. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation *Psychological Bulletin* 125(6), 627-668.
- Dirks, K. T., Ferrin, D. L., 2002. Trust in Leadership: Meta-Analytic Findings and Implications for Research and Practice. *Journal of Applied Psychology* 87(4), 611-628.
- Dore, R., 1983. Goodwill and the Spirit of Market Capitalism. *British Journal of Sociology* 34, 459-82.
- Dufwenberg, M., Gneezy, U., 2000. Measuring Beliefs in an Experimental Lost Wallet Game. *Games and Economic Behavior* 30, 163-182.
- Duneier, Mitchell. 1994. *Slim's table: Race, Respectability and Masculinity*. Chicago: University of Chicago Press.
- Dyers, J., Chu, W., 2003. The Role of Trustworthiness in Reducing Transaction Costs and Improving Performance: Empirical Evidence from the United States, Japan, and Korea. *Organization Science* 14(1), 57-68.
- Eckel, C. C., Petrie, R., 2011. Face Value. *American Economic Review*, 101(4), 1497-1513.
- Eckel, C., Wilson, R., 2004. Is trust a risky decision? *Journal of Economic Behavior &*

Organization 55, 447-465.

- Ensminger, J., 2004. Market Integration and Fairness: Evidence from Ultimatum, Dictator, and Public Good Experiments in East Africa. In: Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H. (Eds.). *Foundations of Human Sociality*. Oxford: Oxford University Press, 356-381.
- Ensminger, J., Cook, K., 2014. Pro-Sociality in Rural America: Evidence from Dictator, Ultimatum, Public Goods, and Trust Games In: Ensminger, J., Henrich, J. (Eds.). *Experimenting with Social Norms: Fairness and Punishment in Cross-Cultural Perspective*. New York: The Russell Sage Foundation Press, xxx
- Ermisch, J., Gambetta, E., Laurie, H., Siedler, T., Uhrig, S. C. N., 2009. Measuring People's Trust. *Journal of the Royal Statistical Society Series A* 172(4), 749-769.
- Falk, A., Kosfeld, M., 2006. The hidden cost of control. *The American Economic Review* 96(5), 1611-630.
- Falk, A., Szech, N., 2013. Morals and Markets. *Science* 340, 707-711.
- Farmer, A., Horowitz, A. W., 2004. The Engagement Game. *Journal of Population Economics* 17, 627-44.
- Fehr, E., 2009. On the economics and biology of trust. *Journal of European Economic Association* 7(2-3), 235-266.
- Fehr, E., Fischbacher, U., 2002. Why Social Preferences Matter: The Impact of Non-Selfish Motives on Competition, Cooperation, and Incentives. *Economic Journal* 112, C1-C33.
- Fehr, E., Fischbacher, U., 2004a. Social norms and human cooperation. *Trends in Cognitive Sciences* 8(4), 185-190.
- Fehr, E., Fischbacher, U., 2004b. Third Party Punishment and Social Norms. *Evolution and Human Behavior* 25, 63-87.
- Fehr, E., Gächter, S., 2000. Cooperation and Punishment in Public Goods Experiments. *The American Economic Review* 90(4), 980-994
- Fehr, E., Gächter, S., Kirchsteiger, G., 1997. Reciprocity as a contract enforcement

- device. *Econometrica* 65, 833-860.
- Fehr, E., Kirchler, E., Weichbold, A., Gächter, S., 1998. When Social Norms Overpower Competition: Gift Exchange in Experimental Labor Markets. *Journal of Labor Economics* 16(2), 324-351.
- Fehr, E., Kirchsteiger, G., Riedl, A., 1993. Does Fairness Prevent Market Clearing? An Experimental Investigation. *The Quarterly Journal of Economics* 108(2), 437-459.
- Fehr, E., List, J., 2004. The Hidden Costs and Returns of Incentives-Trust and Trustworthiness Among CEOs. *Journal of the European Economic Association* 2(5), 743-771.
- Fischbacher, U., 2007. z-Tree: Zurich Toolbox for Ready-made Economic Experiments. *Experimental Economics* 10(2), 171-178.
- Fischbacher, U., Gächter, S., Fehr, E., 2001. Are people conditionally cooperative? Evidence from a public goods experiment. *Economic Letters* 71, 397-404.
- Foddy, M., Yamagishi, T., 2009. Group-based trust. In: Cook, K., Levi, M., Hardin, R. (Eds.). *Whom Can We Trust?*. New York: Russell Sage Foundation, 17-41.
- Foley, M., Edwards, B., 1999. Is it time to disinvest in social capital? *Journal of Public Policy* 19(2), 141-173.
- Franciosi, R., Kujal, P., Michelitsch, R., Smith, V., Dong, G., 1995. Fairness: Effect on Temporary and Equilibrium Prices in Posted-Offer Markets. *Economic Journal* 105, 938-50.
- Frank, R. H., 1988. *Passion within Reason: The Strategic Role of the Emotions*. New York: W. W. Norton & Company.
- Frey, B., Oberholzer-Gee, F., 1997. The Cost of Price Incentives: An Empirical Analysis of Motivation Crowding-Out. *The American Economic Review* 87(4), 746-755.
- Friedman, D., McNeill, D., 2013. *Morals and Markets: The Dangerous Balance*. New York: Palgrave Macmillan.
- Fukuyama, F., 1995. *Trust: the social virtues and the creation of prosperity*. London:

Hamish Hamilton.

Gächter, S., Fehr, E., 1999. Cooperation and Punishment in Public Goods Experiments. *The American Economic Review* 90(4), 980-994.

Gambetta, D., 1998. *Trust: Making and breaking cooperative relations*. Cambridge: Blackwell.

Gardiner, C., 1998. Mentoring: Towards a Professional Friendship. *Mentoring and Tutoring: Partnership in Learning* 6(1-2), 77-84.

Ghezzi, S., Mingione, E., 2007. Embeddedness, Path Dependency and Social Institutions: An Economic Sociology Approach. *Current Sociology* 55(1), 11-23

Glaeser, E. L., Laibson, D., Scheinkman, J., Soutter, C., 2000. Measuring Trust. *The Quarterly Journal of Economics* 115, 811-846.

Gneezy, U., List, J., 2006. Putting Behavioral Economics to Work: Testing for Gift Exchange in Labor Markets Using Field Experiments. *Econometrica* 74(5), 1365-1384.

Granovetter, M., 1973. Strength of Weak Ties. *American Journal of Sociology*, 78, 1360-1380.

Granovetter, M., 1983. The Strength of Weak Ties: A Network Theory Revisited. *Sociological Theory* 1, 201-233.

Granovetter, M., 1985. Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology* 91, 481-510.

Granovetter, M., 2005. The Impact of Social Structure on Economic Outcomes. *Journal of Economic Perspectives* 19(1), 33-50.

Gudeman, S., 2001. *The anthropology of economy*. Malden: Blackwell.

Gui, B., 1996. On “relational goods”: strategic implications of investment in relationships. *International Journal of Social Economics*, 23(10/11), 260 – 278.

Gui, B., Sudgen, R., 2005. *Economics and Social Interaction: Accounting for*

Interpersonal Relations. Cambridge: Cambridge University Press.

Guiso, L., Sapienza, P., Zingales, L., 2004. The role of social capital in financial development. *The American Economic Review*, 94(3), 526–556.

Guiso, L., Sapienza, P., Zingales, L., 2006. "Does Culture Affect Economic Outcomes?" *Journal of Economic Perspectives*, 20(2): 23-48.

Guiso, L., Sapienza, P., Zingales, L., 2009. Cultural biases in economic exchange? *The Quarterly Journal of Economics* 124(3), 1095-1131.

Gurven, M., 2004. Does market exposure affect economic game behavior? In: Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H. (Eds.). *Foundations of Human Sociality*. Oxford: Oxford University Press, 194-231.

Hargreaves Heap, S., Tan, J., Zizzo, D., 2013. Trust, inequality and the market. *Theory and Decision* 74, 311-333.

Hayek, F. A., 1945. The Use of Knowledge in Society. *The American Economic Review* 35(4), 519-530.

Hayek, F. A., 1976. *Law, Legislation, and Liberty*, Vol. 2: *The Mirage of Social Justice*. Chicago: University of Chicago Press.

Hayek, F. A., 1988. *The Fatal Conceit: The Errors of Socialism*. Chicago: The University of Chicago Press.

Haytko, D., 2004. Firm-to-firm and interpersonal relationships: Perspectives from advertising agency account managers. *Journal of Academy of Marketing Science* 32(3), 312-328.

Henderson, M., Argyle, M., 1985. *The Anatomy of Relationships: And the Rules and Skills Needed to Manage Them Successfully*. London: Penguin UK.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., 2004. *Foundations of Human Sociality*. Oxford: Oxford University Press.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., McElreath, R., Alvard, M., Barr, A., Ensminger, J., Smith Henrich, N., Hill, K., Gil-White, F., Gurven, M., Marlowe, F., Patton, J., Tracer, D., 2005. "Economic Man" in cross-

- cultural perspective: Behavioral experiments in 15 small-scale societies. *Behavioral and Brain Sciences* 25, 795-855.
- Henrich, J., Boyd, R., Bowles, S., Camerer, C., Gintis, H., McElreath, R., Fehr, E., 2001. In search of homo-economicus: Behavioral experiments in 15 small-scale societies. *The American Economic Review* 91, 73–78.
- Henrich, J., Ensminger, J., McElreath, R., Barr, A., Barrett, C., Bolyanatz, A., Cardenas, J., Gurven, M., Gwako, E., Henrich, N., Lesorogol, C., Marlowe, F., Tracer, D., Ziker, J., 2010. Markets, religion, community size, and the evolution of fairness and punishment. *Science* 327, 1480–1484
- Herrmann, B., Thoni, C., Gächter, S., 2008. Antisocial punishment across societies. *Science* 319, 1362-1367.
- Herz, H., Taubinsky, D., 2014. What Makes a Price Fair? An Experimental Study of Market Experience of Endogenous Fairness Norms. University of Zurich, Department of Economics Working Paper No. 128.
- Hirschman, A., 1977. *The Passions and the Interests*. Princeton: Princeton University Press.
- Hodson, R., 1997. Group relations at work: Solidarity, Conflict, and Relations with management. *Work and occupations* 24(4), 426-452.
- Hoffman, E., McCabe, K., Smith, V., 1994. Preferences, Property Rights, and Anonymity in Bargaining Games. *Games and Economic Behavior* 7(3), 346-380.
- Hoffman, E., McCabe, K., Smith, V., 1996. Social Distance and Other-Regarding Behavior in Dictator Games. *American Economic Review* 86, 235-257.
- Hoffman, M., Yoeli, E., Nowak, M. A., 2015. Cooperate Without Looking: Why We Care What People Think and Not Just What They Do. *PNAS* 112(6), 1727-1732.
- Hoffman, M., Yoeli, E., Navarrete, C. D., 2016. Game Theory and Morality. In: Shackelford, T. K., Hansen, R. D. (Eds.). *The Evolution of Morality*. New York: Springer.
- Holt, C., Laury, S., 2002. Risk Aversion and Incentive Effects. *The American Economic*

- Review 92(5), 1644-1655.
- Houser, D., Schunk, D., Winter, J. 2010. Distinguishing trust from risk: An anatomy of the investment game. *Journal of Economic Behavior and Organization* 74(1-2): 72-81.
- Hume, D., 1985. *Essays, Moral, Political and Literacy*. Indianapolis: Liberty Fund.
- Ikeda, S., 2008. The Meaning of "Social Capital" as It Relates to the Market Process. *Review of Austrian Economics* 21, 167-182.
- Ingram, P., Roberts, P., W., 2000. Friendship among Competitors in the Sydney Hotel Industry. *American Journal of Sociology* 106(2), 387-423.
- James Jr., Harvey S. 2002. The trust paradox: A survey of economic inquiries into the nature of trust and trustworthiness. *Journal of Economic Behavior and Organization* 47, 291-307.
- Johnson, N., Mislin, A., 2011. Trust Games: A Meta-Analysis. *Journal of Economic Psychology* 32, 865-889.
- Kahneman, D., Knetsch, J., Thaler, R., 1986. Fairness as a Constraint on Profit Seeking: Entitlement in the Market. *American Economic Review* 76, 728-41.
- Keefer, P., Knack, S., 1997. Does social capital have an economic payoff? A cross-country investigation. *The Quarterly Journal of Economics* 112(4), 1251-1288.
- Kiesling, L., 2015. The Knowledge Problem. In: Boettke, P. J., Coyne, C. J. (Eds.). *The Oxford Handbook of Austrian Economics*. Oxford: Oxford University Press, 45-64.
- Kirzner, I. M., 1973. *Competition and Entrepreneurship*. Chicago: The University of Chicago Press.
- Kirzner, I. M., 1997. Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach. *Journal of Economic Literature*, 35(1), 60-85.
- Konosky, M., Pugh, D., 1995. Citizenship Behavior and Social Exchange. *Academy of Management Journal* 76, 698-707.



- Kram, K., 1983. Phases of the mentor relationship. *Academy of Management Journal* 26(4), 608-625.
- Kramer, R., 1999. Trust and Distrust in Organizations: Emerging Perspectives, Enduring Questions. *Annual Review of Psychology* 50, 569-598.
- Krippner, G. R., Alvarez, A. S., 2007. Embeddedness and the Intellectual Projects of Economic Sociology. *Annual Review of Sociology* 33, 219-240.
- Krupka, E., Weber, R., 2009. The focusing and informational effects of norms on pro-social behavior. *Journal of Economic Psychology* 30(3), 307-320.
- Kube, S., Maréchal, M., Puppe, C., 2013. Do wage cuts damage work morale? Evidence from a natural field experiment. *Journal of European Economic Association* 11(4), 853-870.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1997. Trust in large organizations. *The American Economic Review* 87(2), 333-338.
- Lachmann, L. M., 1978. *Capital and Its Structure*. 2d ed. Kansas City: Sheed Andrews and McMeel.
- Langrill, R., Storr, V. H., 2012. The Moral Meanings of Markets. *Journal of Markets and Morality* 15, 347-362.
- Lavoie, D., 1986. The Market as a Procedure for Discovery and Conveyance of Inarticulate Knowledge. *Comparative Economic Studies* 28, 1-19.
- Lavoie, D., 1991. The Discovery and Interpretation of Profit Opportunities: Culture and the Kirznerian Entrepreneur. In: Berger, B. (Ed.). *The Culture of Entrepreneurship*. San Francisco: ICS Press, 33-51.
- Lefebvre, H., 1991. *The Production of Space*. Malden: Blackwell.
- Lewis, P., 2008. Uncertainty, Power and Trust. *Review of Austrian Economics* 21(2-3), 183-198.
- List, J., Cherry, T., 2000. Learning to Accept in Ultimatum Games: Evidence from an Experimental Design that Generates Low Offers. *Experimental Economics* 3, 11-

- Marx, K. 1844. *Estranged Labor*. *Economic and Philosophical Manuscripts of 1844*.
- Marx, K., 1937. *Capital: A Critique of Political Economy*. New York: Modern Library.
- Marx, K., 1872. *On Authority*. In Robert Tucker (trans.), *Marx-Engels Reader*. New York: W.W. Norton, 730-733.
- Marx, K., 1975. *Notes on Mill's Elements of Political Economy*. In: Dutts, C. (Tr.). *Collected Works, Volume 3: Marx and Engels 1843-1844*. New York: International Publishers.
- McCloskey, D. N., 1994. *Bourgeois Virtues*. *American Scholar* 63(2), 177-191.
- McCloskey, D. N., 2006. *The Bourgeois Virtues: Ethics for an Age of Commerce*. Chicago: University of Chicago Press.
- McIntyre, A., 2007. *After Virtue: A Study in Moral Theory*, 3d ed. Notre Dame: University of Notre Dame Press.
- Mehta, J., Starmer, C., Sugden, R., 1994. *The Nature of Salience: An Experimental Investigation of Pure Coordination Games*. *The American Economic Review* 84(3), 658-73.
- Mises, L., 1949. *Human Action: A Treatise on Economics*, 3d ed., rev. San Francisco: Fox & Wilkes.
- Misztal, B., 1996. *Trust in Modern Societies: The Search for the Bases of Social Order*. Cambridge: Polity Press.
- Montesquieu, C., 1961. *De l'esprit des lois*. Paris: Garnier.
- Mouw, T., 2003. *Social Capital and Finding a Job: Do Contacts Matter?* *American Sociological Review* 68, 868-898.
- North, D. C., 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- Nunn, N., Wantcheko, L., 2011. *The Slave Trade and the Origins of Mistrust in Africa*.

- American Economic Review 101(7), 3221-3252.
- Okun, A. M., 1981. *Prices and Quantities: A Macroeconomic Analysis*. Washington, D. C.: Brookings Institution Press.
- Ostrom, E., Walker, J., 2003. *Trust and Reciprocity: Interdisciplinary Lessons for Experimental Research*. Russell Sage Foundation.
- Paganelli, M., 2010. The Moralizing Role of Distance in Adam Smith: The Theory of Moral Sentiments as Possible Praise of Commerce. *History of Political Economy* 42(3), 425-441.
- Paine, T., 1984. *The Rights of Man*. New York: Penguin Books.
- Pierce, C., Byrne, D., Aguinis, H., 1996. Attraction in organizations: A model of workplace romance. *Journal of Organizational Behavior* 17, 5-32.
- Podolny, J. M., Baron, J. N., 1997. Resources and Relationships: Social Networks and Mobility in the Workplace. *American Sociological Review* 62, 673-693.
- Polanyi, K., 1957. *The Great Transformation*. Boston: Beacon Press.
- Polanyi, K., 1979. *Okonomie und Gesellschaft*. Frankfurt: Suhrkamp Verlag.
- Portes, A., 2000. The Two Meanings of Social Capital. *Sociological Forum* 15, 1-12.
- Portes, A., Landolt, P., 1996. The downside of social capital. *The American Prospect* 26, 18-23.
- Portes, A., Sensenbrenner, J., 1993. Embeddedness and Immigration: Notes on the Social Determinants of Economic Action. *American Journal of Sociology* 98(6), 1320-1360.
- Price, L., Arnould, E., 1999. Commercial friendships: Service provider-client relationships in context, *Journal of Marketing* 63, 38-56.
- Putnam, R., 1993. *Making democracy work: Civic traditions in modern Italy*. Princeton: Princeton University Press.
- Putnam, R., 1995. Bowling Alone: America's Declining Social Capital, *Journal of*

Democracy 6, 65–78.

Putnam, R., 2000. *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster.

Rauch, James, “Networks Versus Markets in International Trade,” *Journal of International Economics*, 41 (1999), 7–35.

Reeson, A., Tisdell, J., 2010. The Market Instinct: The Demise of Social Preferences for Self-Interest. *Environmental Resource Economics* 47, 439-453.

Renner, E., Tyran, J.-R., 2004. Price Rigidity in Customer Markets. *Journal of Economic Behavioral and Organization* 55, 575-593.

Reuben, E., Sapienza, P., Zingales, L., 2009. Is Mistrust Self-Fulfilling?. *Economic Letters* 104(2), 89-91.

Rizza, R., 2006. The Relationship between Economics and Sociology: The Contribution of Economic Sociology, Setting out from the Problem of Embeddedness. *International Review of Sociology* 16, 31–48.

Romo, F., Schwartz, M., 1995. The Structural Embeddedness of Business Decisions: The Migration of Manufacturing Plants in New York State, 1960-1985. *American Sociological Review* 60, 874-907

Rose, D., 2016. Virtues as Social Capital. In: Baker, J. A., White, M. D. (Eds.). *Economics and Virtues: Building a New Moral Foundation*. Oxford: Oxford University Press, 202-216.

Roth, A. E., Prasnikar, V., Okuno-Fujiwara, M., Zamir, S., 1991. Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study. *American Economic Review* 81, 1068-1095.

Rousseau, D. M., Sitkin, S. B., Burt, R. S., Camerer, C., 1998. Not so different after all: A cross-discipline view of trust. *Academy of Management Review* 23(3), 393-404.

Rubio, M., 1997. Perverse Social Capital: Some Evidence from Colombia. *Journal of Economic Issues* 31, 805-816.

- Rumelt, R., Schendel, D, Teece, D., 1991. Strategic Management and Economics. *Strategic Management Journal*, Winter Special Issue 12, 5-29.
- Runst, P., 2013. Post-Socialist Culture and Entrepreneurship. *American Journal of Economics and Sociology* 72(3), 593-626.
- Sandel, M., 2012. *What Money Can't Buy: The Moral Limits of Markets*. New York: Farrar, Straus and Giroux.
- Schotter, A., Weiss, A., Zapater, I., 1996. Fairness and survival in ultimatum and dictatorship games. *Journal of Economic Behavior & Organization* 31(1), 37-56.
- Seabright, P., 2010. *The Company of Strangers: A Natural History of Economic Life*. Princeton: Princeton University Press.
- Shang, J., Croson, R., 2006. The Impact of Social Comparisons on Nonprofit Fund Raising. In: Isaac, R., Davis, D. (Eds.). *Experiments Investigating Fundraising and Charitable Contributors (Research in Experimental Economics, Volume 11)*. Oxford: JAI Press, 143-156.
- Shleifer, A., 2004. Does competition destroy ethical behavior? *The American Economic Review* 94(2): 414-418.
- Silver, A., 1990. Friendship in Commercial Society: Eighteenth-Century Social Theory and Modern Sociology. *American Journal of Sociology* 95, 1474-1504.
- Smith, A., 1981. *An Inquiry Into the Nature and Causes of the Wealth of Nations*, Volume 1. Indianapolis: Liberty Fund.
- Smith, A., 1982a. *Lectures on Jurisprudence*. Indianapolis: Liberty Fund.
- Smith, A., 1982b. *The Theory of Moral Sentiments*. Indianapolis: Liberty Fund.
- Snijders, C., 1996. *Trust and commitments*. Interuniversity Center for Social Science Theory and Methodology, Purdue University Press.
- Spence, A. M., 1973. Time and Communication in Economic and Social Interaction. *The Quarterly Journal of Economics* 87, 651-60.

- Storr, V. H., 2004. *Enterprising Slaves and Master Pirates*. New York: Peter Lang.
- Storr, V. H., 2008. The Market as a Social Space: On the Meaningful Extraeconomic Conversations that can occur in Markets. *Review of Austrian Economics* 21, 135-150.
- Storr, V. H., 2009. Why the Market? Markets as Social and Moral Spaces. *Journal of Markets and Morality* 12(2), 277-296.
- Storr, V. H., 2012.
- Storr, V. H., Forthcoming. "The Impartial Spectator and the Moral Teachings of Markets." In: Schmidtz, D. (Ed.), *Oxford Handbook of Freedom*. Oxford: Oxford University Press.
- Sugden, R., 1995. The Coexistence of Conventions. *Journal of Economic Behavior & Organization* 28, 241-256.
- Sutter, M., Kocher, M., 2007. Trust and trustworthiness across different age groups. *Games and Economic Behavior* 59(2), 364-382.
- Tabellini, G., 2008. The Scope of Cooperation: Values and Incentives. *The Quarterly Journal of Economics* 123(3), 905-950.
- Torsvik, G., 2000. Social capital and economic development: A plea for mechanisms. *Rationality and Society* 12(4), 451-476.
- Tracer, D., 2004. Market Integration, Reciprocity, and Fairness in Rural Papua New Guinea: Results from a Two-Village Ultimatum Game Experiment. In: Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H., 2004. *Foundations of Human Sociality*. Oxford: Oxford University Press, 232-259.
- Tu, Q., Bulte, E., 2010. Trust, Market Participation and Economic Outcomes: Evidence from Rural China. *World Development* 38(8), 1179-1190.
- Uhlener, C., 1989. Relational goods and participation: Incorporating sociability into a theory of rational action. *Public Choice* 62, 253-285.
- Uzzi, B., 1996. The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect. *American Sociological*

Review 61(4), 674-698.

Uzzi, B., 1999. Embeddedness in the Making of Financial Capital: How Social Relations and Networks Benefit Firms Seeking Financing. *American Sociological Review* 64, 481-505.

Uzzi, B., Lancaster, R., 2004. Embeddedness and Price Formation in the Corporate Law Market. *American Sociological Review* 69, 319-344.

van den Bos, W., van Dijk, E., Crone, E. A. 2012. Learning whom to trust in repeated social interactions: A developmental perspective. *Group Processes and Intergroup Relations*, 15(2), 243-256.

Veblen, T., 1994. *The Theory of the Leisure Class*. London: Penguin Books.

Walton, R. E., McKersie, R. B., 1965. *A Behavioral Theory of Labor Negotiations*. New York: McGraw-Hill.

Weber, M., 1978. *Economy and society: An outline of interpretive sociology*, two volumes. Berkeley: University of California Press.

Williams C., Giuffre, P., Dellinger, K., 1999. Sexuality in the workplace: Organizational control, sexual harassment and the pursuit of pleasure. *Annual Review of Sociology* 25, 73-93.

Williamson, O., 1975. *Markets and Hierarchies*. New York: The Free Press.

Williamson, O., 1993. *Calculativeness, Trust, and Economic Organization*.

Wilson, W. J., 1987. *The Truly Disadvantaged: The Inner-City, the Underclass and Public Policy*. Chicago: University of Chicago Press.

Woolcock, M., 1998. Social Capital and Economic Development: Toward a Theoretical Synthesis and Policy Framework. *Theory and Society* 27, 151-208.

Zaheer, A., McEvily, B., Perrone, V., 1998. Does Trust Matter? Exploring the Effects of Interorganizational and Interpersonal Trust on performance. *Organization Science* 9, 141-59.

Zak, P., 2008. *Moral Markets: The Critical Role of Values in the Economy*. Princeton:

Princeton University Press.

Zak, P., Knack, S., 2001. Trust and Growth. *The Economic Journal* 111(470), 295-321.

Zavella, P. 1985. "Abnormal intimacy": The varying work networks of Chicana cannery workers. *Feminist Studies* 11, 541-557.

Zelizer, V., 2005. *The Purchase of Intimacy*. Princeton: Princeton University Press.

Zelizer, V., 2011. *Economic Lives: How Culture Shapes the Economy*. Princeton: Princeton University Press.

Zelizer, V., 2012. *Solidarity in Strategy: Making Business Meaningful in American Trade Associations*. Chicago: University of Chicago Press.



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