

Trust and Trustworthiness: An Experimental Economics Approach

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My Research

- **Experimental game theory and bargaining**

Croson 1996, Croson 1999, Boles, Croson & Murnighan 2000, Croson, Boles & Murnighan 2003, Buchan, Croson & Johnson 2004, Buchan, Croson, Johnson & Wu 2005, Croson & Konow 2009, Croson & Gneezy forthcoming

- **Negotiation: media, deception, reputation, cross-cultural**

Croson 1999, Schweitzer & Croson 1999, Croson 2001, Schweitzer, Brodt & Croson 2002, Croson & McGinn 2004

- **Social dilemmas/Public goods**

Croson 1996, Marks & Croson 1998, Croson & Marks 1998, Marks & Croson 1999, Croson & Marks 1999, Marks & Croson 2000, Croson 2000, Croson 2000, Marks & Croson 2001, Croson, Fatas & Neugebauer 2005, Buckley & Croson 2006, Croson 2007, Cadsby, Croson, Marks & Maynes 2008, , Andreoni & Croson 2008, Croson 2008, Croson & Marks 2009, Croson, Fatas & Neugebauer 2009

- **Behavioral/Experimental**

Finance: Croson, Gomes, Noeth & McGinn 2005, Croson & Sundali 2005, Sundali & Croson 2006, Croson, Fox & Sundali forthcoming,

Strategy: Agarwal, Anand & Croson 2006, Agarwal, Anand & Croson 2007, Agarwal, Croson & Mahoney forthcoming

Law and Politics: Croson & Mnookin 1997, Croson & Johnston 2000, Onculer & Croson 2005, Croson, Johnston & Rachlinski 2009

- **More recently, behavioral/experimental**

Marketing/nonprofit fundraising: Croson & Shang 2006, Shang, Reed & Croson 2008, Shang & Croson 2008, Shang, Handy & Croson 2009, Shang & Croson 2009, Shang, Handy & Croson forthcoming, Shang & Croson forthcoming, Croson & Krupka 2009

Operations Management: Croson & Donohue 2002, Croson & Donohue 2003, Croson & Donohue 2005, Croson & Donohue 2006, Knox, Gans & Croson 2007, Croson, Donohue, Katok & Sterman 2009, Croson, Croson & Ren 2009, Bendoly, Croson, Goncalves & Schultz 2009

This Talk: Trust and Trustworthiness

- Croson and Buchan 1999 Gender and Culture: International Experimental Evidence from Trust Games, *AER P&P*
- Buchan, Croson and Dawes 2002, Swift Neighbors and Persistent Strangers: A Cross-Cultural Investigation of Trust and Reciprocity in Social Exchange, *American Journal of Sociology*
- Buchan and Croson 2004, The Boundaries of Trust: Own and Others' Actions in the US and China, *Journal of Economic Behavior and Organization*
- Buchan, Johnson and Croson 2006, Let's Get Personal: An International Examination of the Influence of Communication, Culture and Social Distance on Other Regarding Preferences, *Journal of Economic Behavior and Organization*
- Buchan, Solnick and Croson 2008, Trust and Gender: An Examination of Behavior, Biases and Beliefs in the Investment Game, *Journal of Economic Behavior and Organization*

Motivation

“...virtually every commercial transaction has within itself an element of trust...(and) [i]t can be plausibly argued that much of the economic backwardness in the world can be explained by a lack of mutual confidence.” Arrow (1972)

- Important for many fields

- Biologists hail trust and reciprocity as the “basis of all human systems of morality (Nowak and Sigmund 2000)
- Economists demonstrate that a rise in country-level trust increases economic growth (Knack and Keefer 1997)
- Political scientists show that the level of trust influences governmental and judicial efficiency (Putnam 1993, LaPorta et al. 1997)
- Psychologists maintain that trust plays a prominent role in the emergence of cooperation in problems of collective action (Dawes 1980)
- Business researchers claim that being a “trusted cooperator” within a global network is requisite to achieving competitive advantages (Morgan and Hunt 1994)
- Legal scholars identify trust as a foundation or alternative for law (Ribstein 2000, Blair and Stout 2001)

Trust in Management

- Reviews: AMR July 1998, Kramer & Tyler 1996
 - Enables cooperative and coordinates behavior
 - Promotes adaptive organizational forms
 - Decreases transactions costs, esp. monitoring and contracting costs
 - Enables rapid formation of work groups
 - Both within organizations (worker/management, worker/worker) & between organizations (incomplete contracts)
- Trust is studied
 - By modeling its development/destruction/recovery (e.g. Lewicki *et al.* 1998)
 - By examining its causes (e.g. Williams 2001)
 - By comparing different countries and cultures (e.g. Fukuyama 1995)
- This research examines trusts' boundaries

Trust in Negotiations

- Review Ross 1996, shows that trust
 - Predicts cooperation in social dilemmas (Komorita & Parks 1994)
 - Enhances ethical negotiating behavior (Rotter 1976, 1980)
 - Leads to higher initial offers, more info. sharing (Kee 1969, Butler 1999)
 - Enhances integrativeness (Valley, Moag & Bazerman 1998)
 - Enables problem-solving and pie-enhancing (Beersma & De Dreu 1999)
 - Is fragile and easily broken (De Dreu, Giebels & Van de Vliert 1998)

Trust in Economics

- Trust is at the root of any economic system based on mutually beneficial exchange ... If a significant number of people violated the trust upon which our interactions are based, ... our economy would be swamped into immobility.” Alan Greenspan, Harvard University Commencement Address (1999)
- Rise in country-level trust increases economic growth of countries (Knack & Keefer 1997, Fukuyama 1995), geographic regions (Putnam 1993) and the economic performance of corporations (Barney and Hansen 1994)

Trust in Experimental Economics

- The Trust (Investment) Game
 - Berg, Dickhaut & McCabe 1995, Van Huyck, Battalio & Walters 1995 (Kreps 1982)
- Used to
 - Study discrimination (Fershtman & Gneezy 2001)
 - Test evolutionary theories (Burnham, McCabe & Smith 2000, Hoffman, McCabe & Smith 1998)
 - Investigate the impact of property rights (Fahr & Irlenbusch 2000)
 - Examine causes of trust (Glaeser et al. 2000, Murnighan, Malhotra & Weber 2000, Pillutla, Malhotra & Murnighan, 2000, Malhotra & Murnighan 2000).
 - Explain labor market decisions (Fehr & coauthors, Guth et al. 1998)
- Some international work
 - Koford (1998 working paper) compared US & Bulgaria
 - Lensberg & van der Heijden (1998 working paper) compared Norway & the Netherlands
- Our papers examine the boundaries of trust among different subject populations (international, genders)

Trust(worthiness) vs. Cooperation

- Definitions

- trust is expectations of another's behavior in a situation involving vulnerability where I may prefer the partner to do A, but he/she has an incentive to do B (Orbell, Dawes, and Schwarz-Shea, 1994)
- trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another (Rousseau, Sitkin, Burt and Camerer, 1998)
- cooperation, in contrast, involves simple self-sacrifice for the collective gain and is not reliant on expectations of others' behavior (trust vs. conditional cooperation)

- This game

- sending money in expectation of a return is trusting behavior (Bolton, Brandts and Ockenfels 1998, Gneezy et al., 2001)

- Trustworthiness

- Important for sustaining trust
 - evolutionary stories (Hoffman, McCabe and Smith 1998; Frank 1995)
- Underlies economic theories
 - product-quality assurance (Camerer 1988)
 - labor markets (Akerlof 1982)

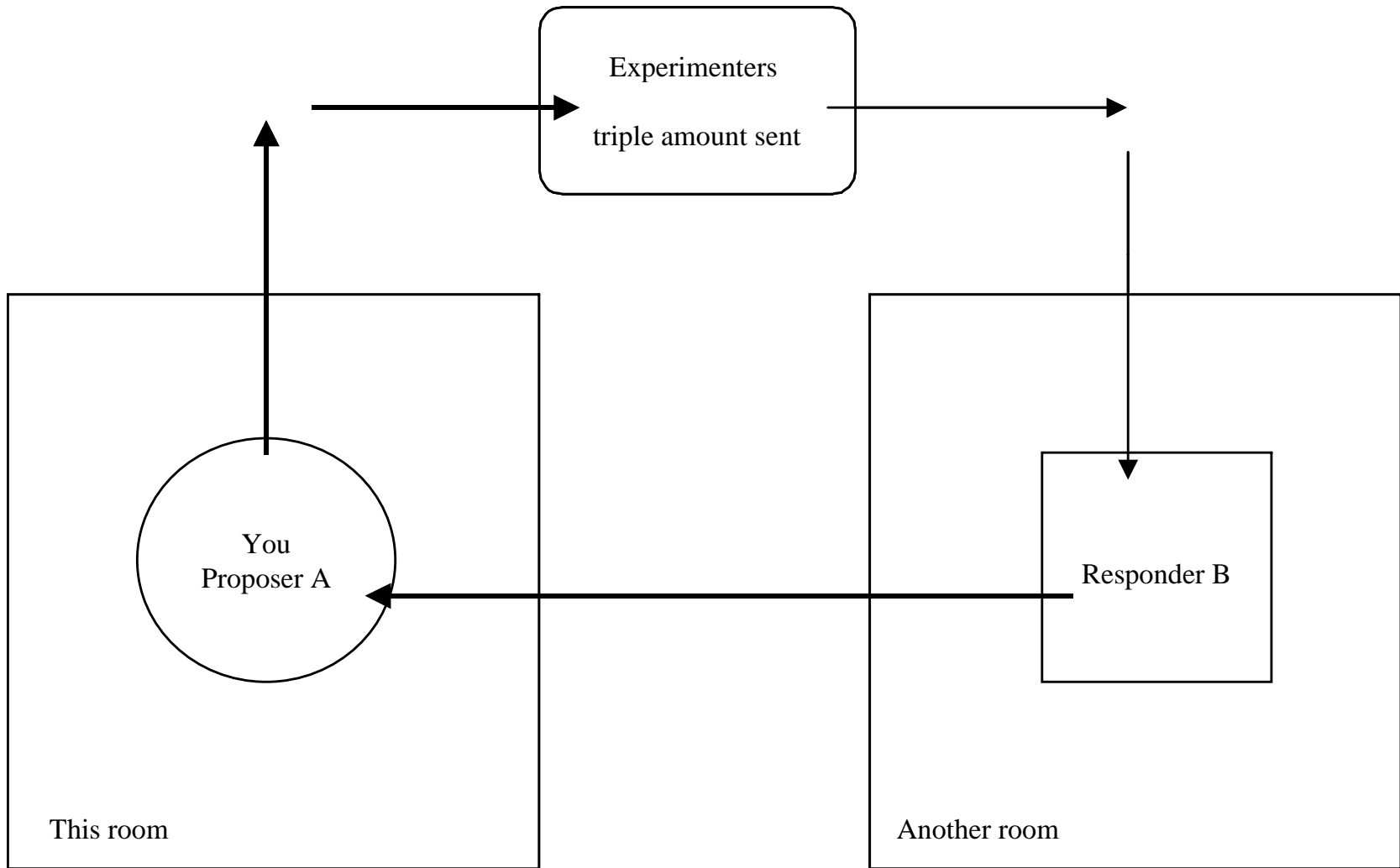
Experimental Economics Methodology

- Chamberlin, 1954
 - Vernon Smith (Arizona/GMU/Chapman), Charlie Plott (Caltech), Al Roth (Pittsburgh/Harvard)
- Methodology (different from psych)
 - induced valuation, abstract description, internal/external validity
- Types of experiments (Roth 1986)
 - testbed policies, investigate anomalies, test theories
- Previous work demonstrates people don't act in pure economic self-interest but instead trust and reciprocate
- This work investigates boundaries of that behavior, conditions under which it is more or less prevalent, ...

The Game

- Trust Game
 - two players, each endowment (\$10)
 - sender sends to responder, money sent triples (e.g. send \$5, receive \$15)
 - responder dictator (e.g. \$25)
 - unique SPE, return nothing, send nothing
 - in the US, subjects trust (30/32 send) and reciprocate (11/30 return more than was sent) more than predicted by the SPE
- Examine both direct and indirect trust and reciprocity
 - larger research program to go beyond simply demonstrating existence, focus on boundaries, what influences its extent (communication, social distance, gender, international comparisons)

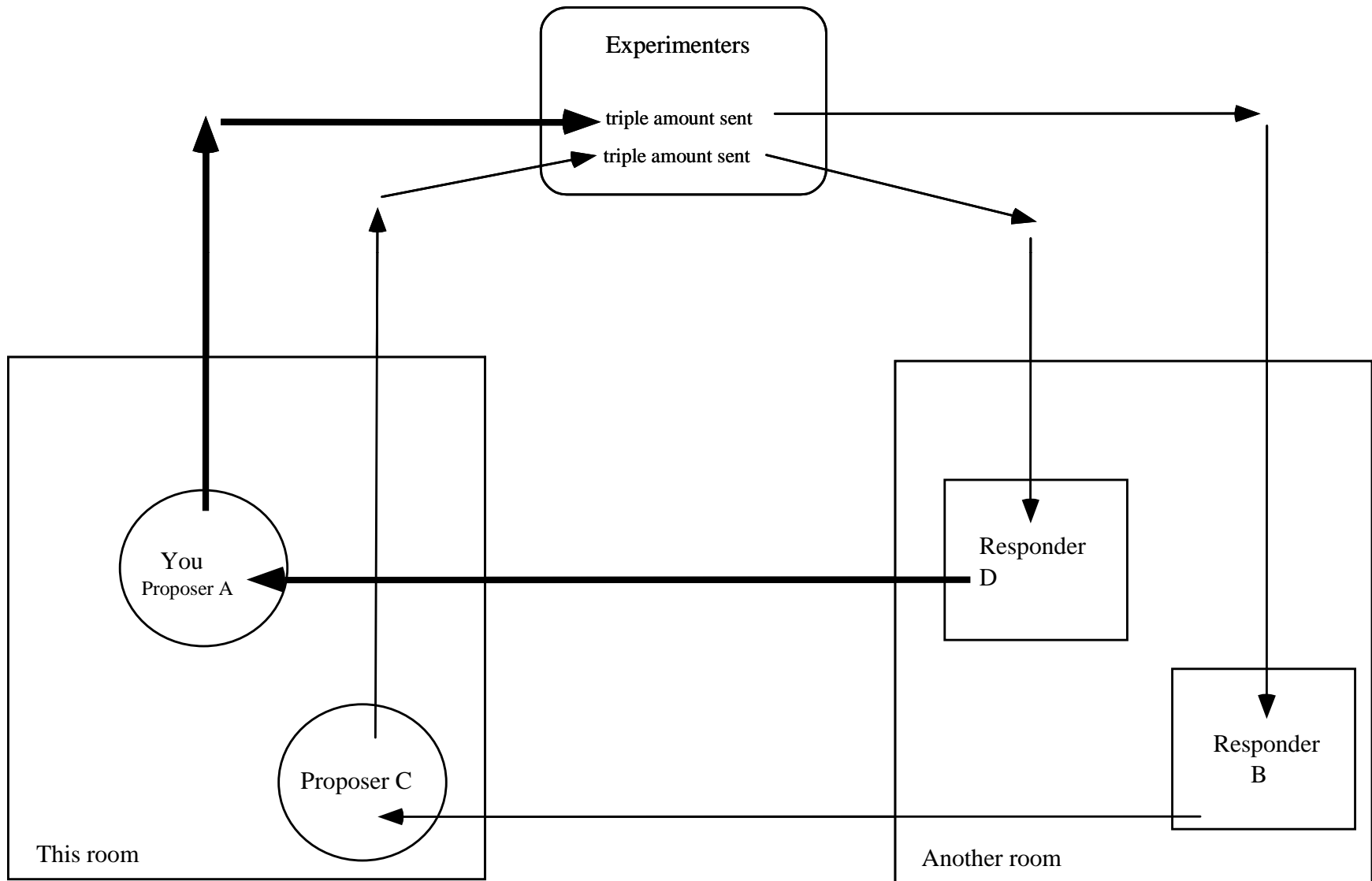
The Game



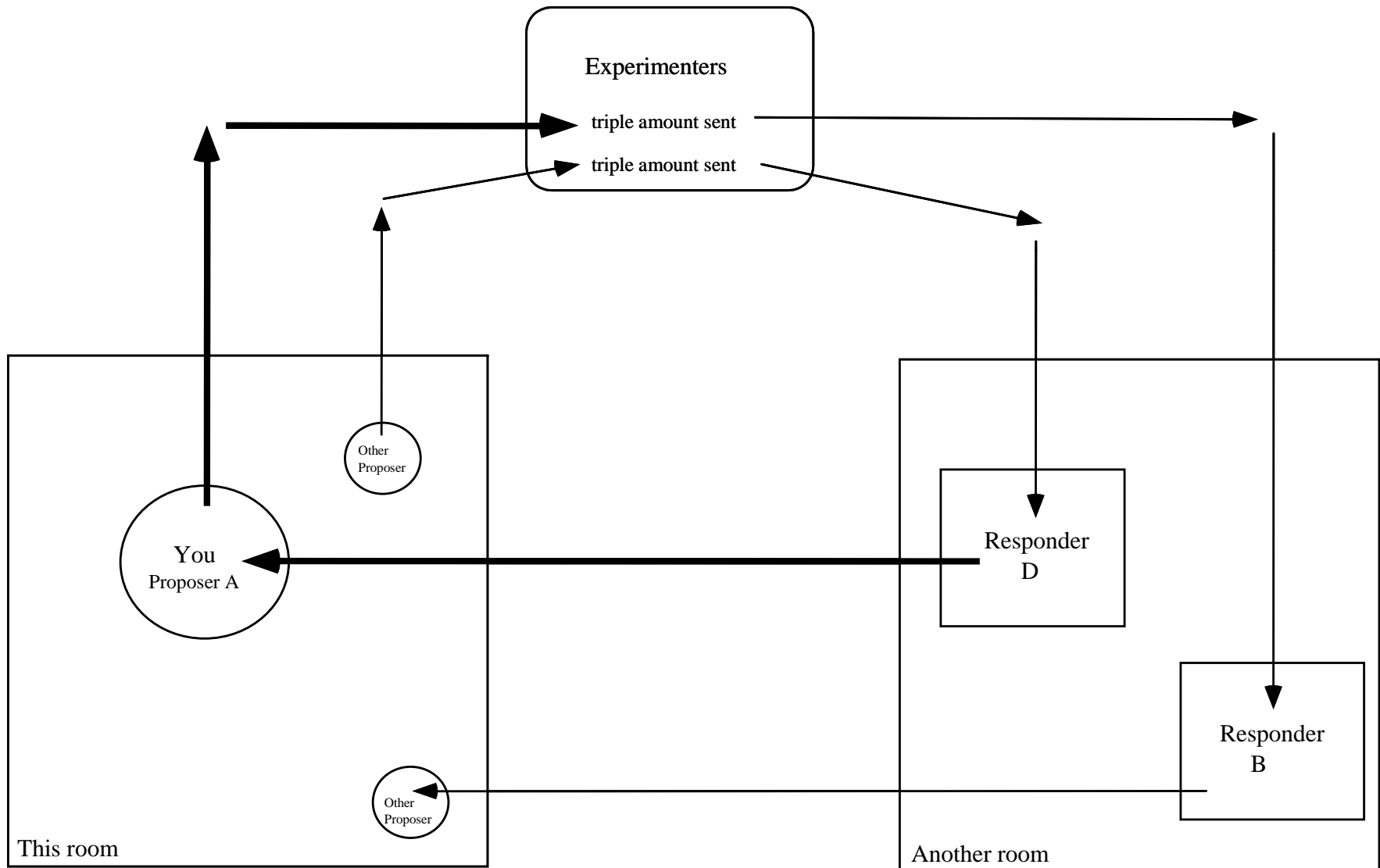
Buchan, Croson and Dawes (2002): Motivation

- Previously run in the US
 - Berg et al., 30/32 participants send, 11/30 return more than was sent
- Why?
 - Experiment 1: varying directness of link for trust and trustworthiness
 - Calculative (self- or other-regarding preferences) vs. norm-based (shared sense of community)
 - If self-regarding preferences, no trust in anything other than direct link
 - If other-regarding, no differences between treatments
 - If norm-based, still observe indirect trust and trustworthiness
- How do trust and reciprocity vary across national groups?
 - Experiment 2: compare among US, China, Japan and Korea
 - Absolutely (main effect) and relatively as reciprocation becomes more indirect
 - Inform us about economic growth (Knack & Keefer 1997)

Group Treatment



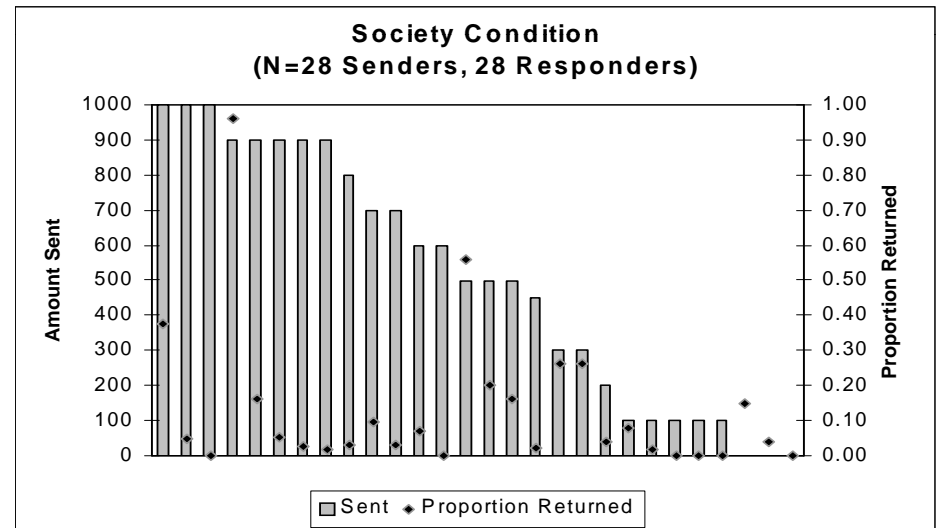
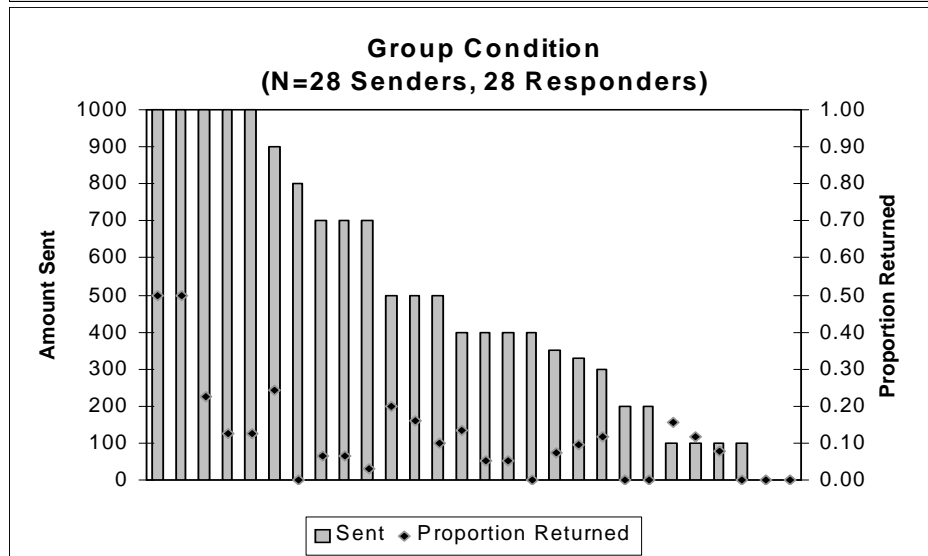
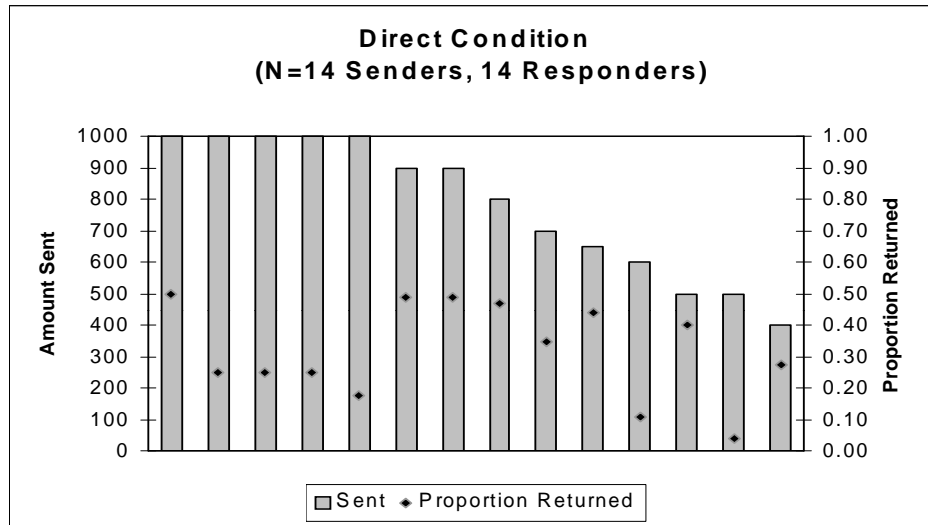
Society Treatment



Experimental Implementation

- Experimental economics rules—not hypothetical
 - Both players given \$10 show-up fee
 - Participants play game once, paid earnings
 - Anonymous and double-blind, no deception
 - Abstract context
- Sample sizes (US only)
 - 14 pairs (14 senders, 14 responders = 28 participants)
 - 14 groups of 4 (28 senders, 28 responders = 56 participants)
 - 28 senders, 28 responders = 56 participants
- Measures
 - Amount sent (out of 1000 units standardized)
 - Proportion returned (out of dictator amount)

Results Descriptive (US)



Regression Results (US)

Independent Variable	Amn't Sent	Prop Ret
Intercept	699.40***	0.227**
Group	-287.89***	-0.231**
Society	-262.24**	-0.194**
Gender	36.65	0.025
Economics education	26.52	0.042
Amount Sent		0.0001**
Adjusted R ²	.120	.375
Number of Observations	69	69

^ p<.10 * p<.05 ** p<.01

Experiment 2: International Comparison

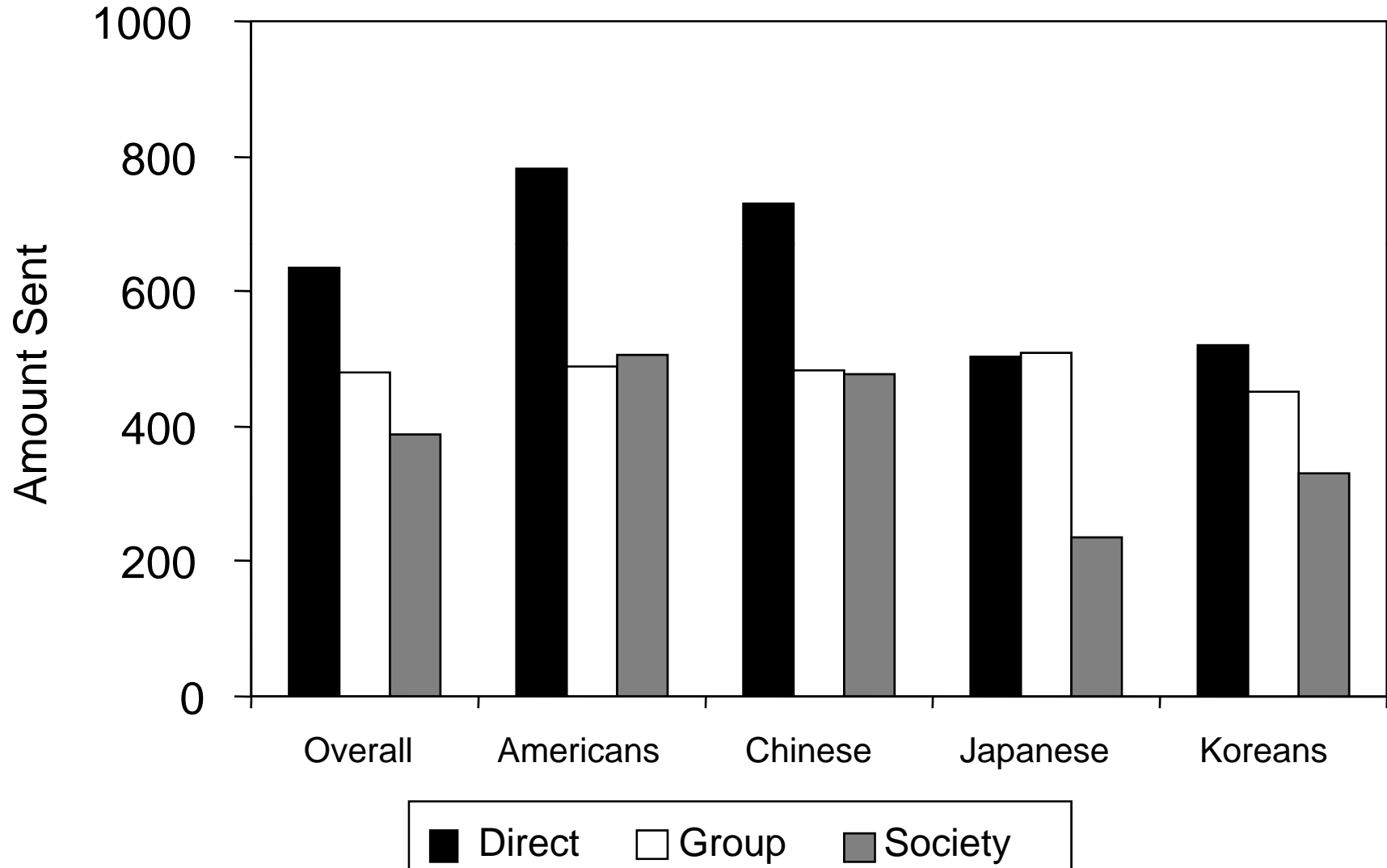
- Run same experiment in China, Japan, Korea
 - Cross-country controls (Roth *et al.* 1991)
 - Subject pool equivalency, currency effects (50 yuan, 2000 yen, 10000 won), language effects, experimenter effects, comprehension
 - Same sample sizes and procedures
- Competing hypotheses
 - Free markets require trust and reciprocity: US > Japan = Korea > China
 - Social Capital (Fukuyama): US = Japan > Korea = China
 - Ouichi: US = Japan
 - Yamagishi & Yamagishi/Hagen & Choe US > Japan

International Regression Results

Independent Variable	Amn't Sent	Prop Ret
Intercept	782.14**	0.3194**
Group	-293.57**	-0.2049**
Society	-276.68**	-0.1887**
China	-53.57	0.1099^
Japan	-277.86**	-0.0703
Korea	-255.36**	0.1103^
Group x China	47.72	0.0611
Group x Japan	298.13*	0.1036
Group x Korea	221.30^	0.0159
Society x China	25.25	-0.0658
Society x Japan	8.46	0.0322
Society x Korea	80.07	-0.0283
Gender	-62.40	0.0381
Economics education	45.30	0.0006
Amount Sent		0.0001**
Adjusted R ²	0.165	0.267
Number of Observations	273	273

^ p<.10 * p<.05 ** p<.01

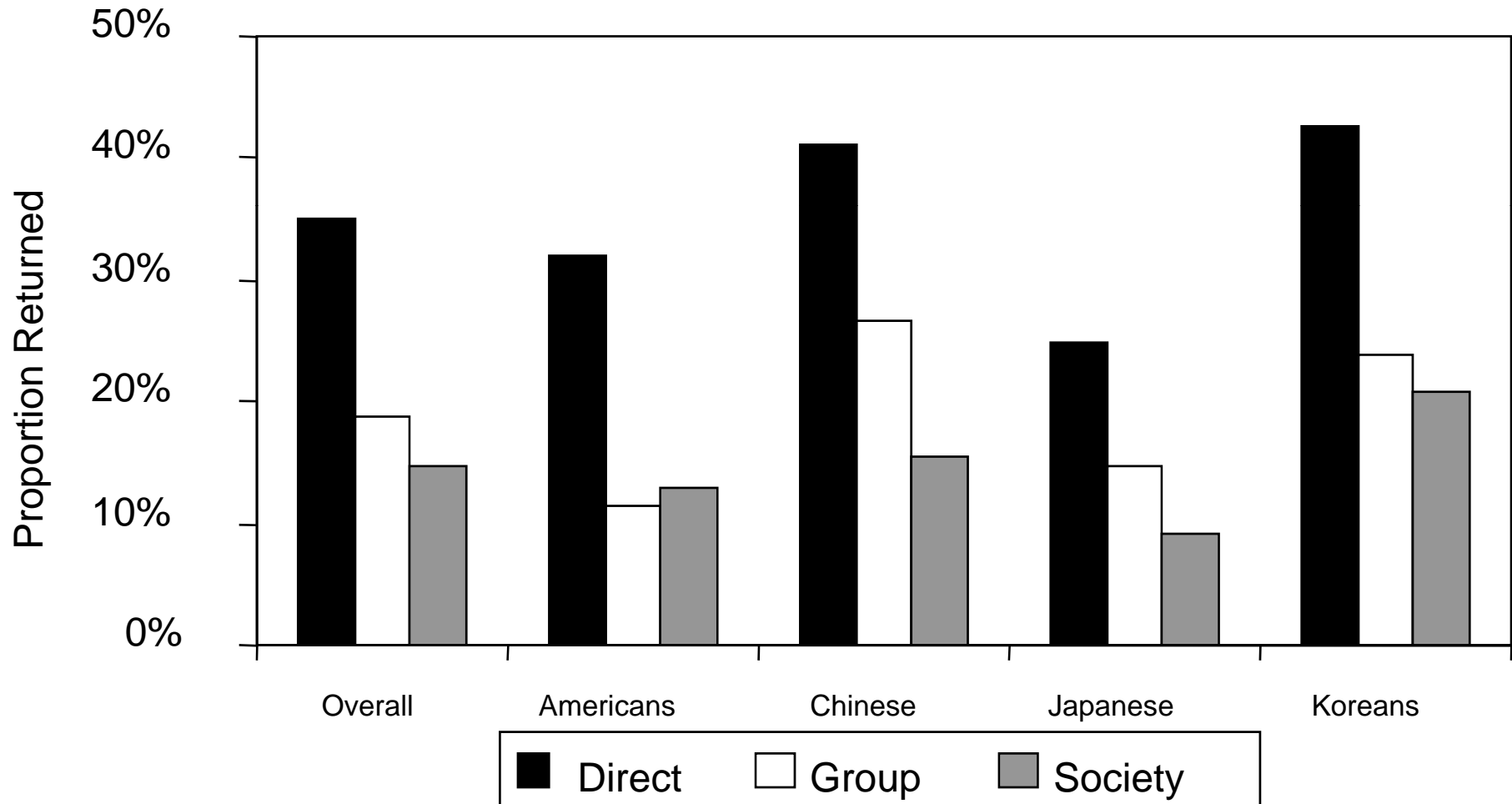
International Trust Results



Trust Results Summary

- Significant dropoff in trust across all conditions
- Significant country-level differences in trust
 - US = China > Japan = Korea
 - Not consistent with any hypotheses
- Interactions between country and treatment
 - T-tests of distributions of amounts sent
 - China and US, $p < .01$ pair and group, ns group and society
 - Korea and Japan, ns pair and group, $p < .06$, $p < .01$ group and society

International Trustworthiness Results



Trustworthiness Results Summary

- Significant dropoff in trustworthiness across conditions
 - pairs > group = society
- Significant country-level differences in trustworthiness
 - Korea = China > Japan = US
 - Not consistent with any hypotheses
- Significant interaction between country and treatment
 - T-tests of distributions of proportion returned
 - All countries significant dropoff between pairs and group ($p < .05$)
 - China and Japan, also significant dropoff between group and society ($p < .05$)

Conclusions and Implications

- Replicated previous results of direct trust and trustworthiness in US
- Why do people trust?
 - Existence of indirect trust and trustworthiness—not pure self-interest
 - Reduction of trust and trustworthiness when link becomes indirect—not pure other-interest
- Country-specific boundaries of trust and trustworthiness
 - Supports social norm explanation—different in different countries

Buchan, Johnson & Croson 2006

- Again examine boundaries of trust & trustworthiness
 - Manipulated social distance (in group/out group using MGP)
 - Important in US in other games (Hoffman, McCabe and Smith 1996, Frey and Bohnet 1997 dictator, Orbell, van de Kragt, and Dawes 1988 social dilemma)
 - Manipulated existence and type of communication (none, personal, impersonal)
 - Strategy-relevant clearly impacts outcomes—not tested here
 - Reconcile competing results in strategy-irrelevant communication
 - Roth (1995) social communication same cooperation as strategy-relevant in bargaining games
 - Dawes, McTavish and Shaklee (1977) fact-based communication same cooperation as none in social dilemmas
 - Carryover effect of personal communication (Frey and Bohnet 1997, Orbell, van de Kragt, and Dawes 1988, Braver and Wilson 1986)
- Add China, Japan and Korea

Experimental Design

- Procedures
 - 44 US subjects
 - Arrive and organized into groups (colors)
 - Discussion (personal/impersonal)
 - Two rooms (senders/responders)
 - Half paired with discussion group (ingroup), half not (outgroup) using colors
 - Outgroup pairings is no-discussion treatment
- Implementation
 - One-shot, paid earnings
 - Double-blind
 - Post-experimental questionnaire

Results Descriptive US

	Amnt Sent	Prop. Ret
Ingroup	758	31%
Outgroup	514	25%
Personal Discussion	712	29%
Impersonal Discussion	581	27%

International Experiments

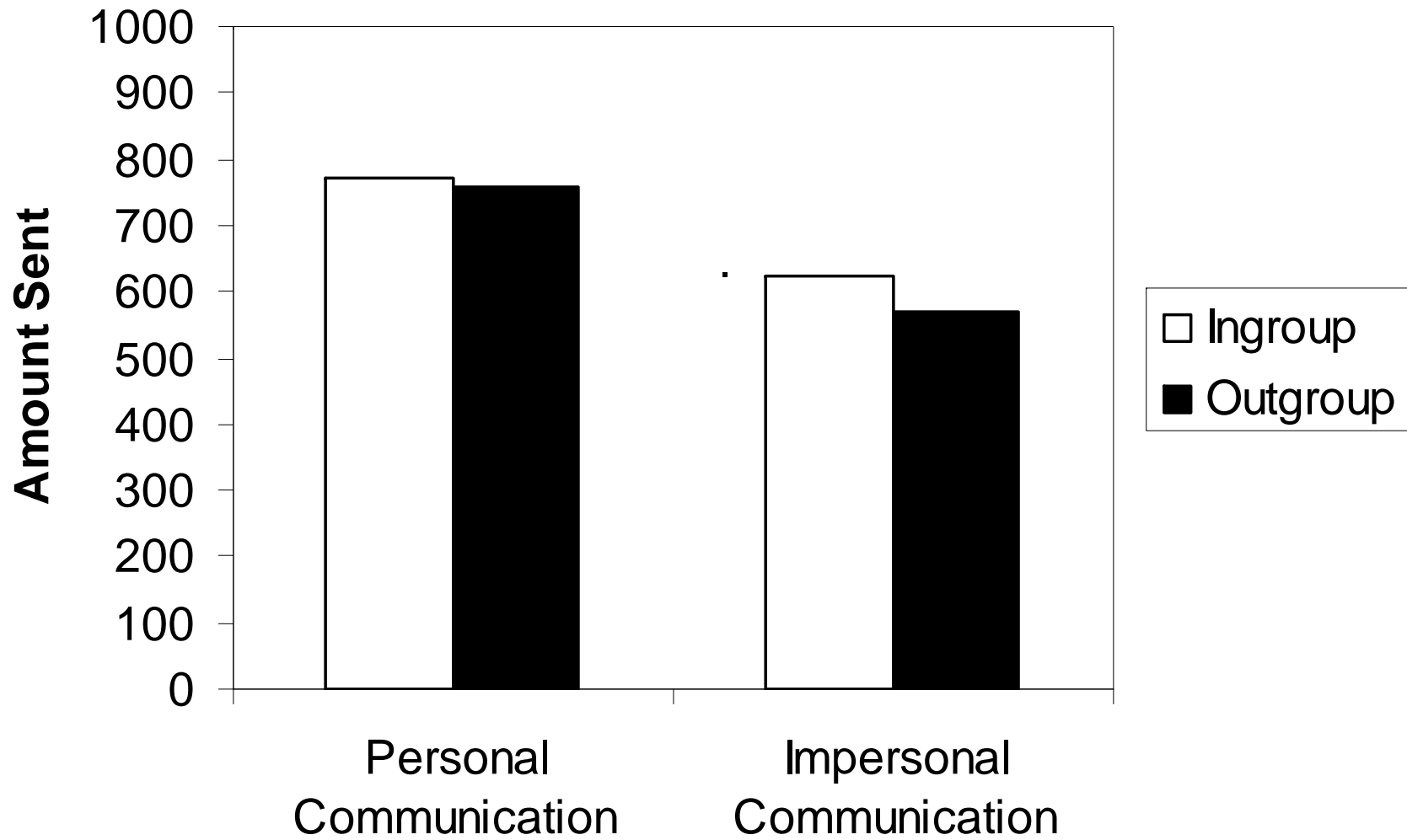
- Run same experiment in China, Japan, Korea
 - Cross-country controls (Roth *et al.* 1991)
 - Subject pool equivalency, currency effects (50 yuan, 2000 yen, 10000 won), language effects, experimenter effects, comprehension
- Additional participants
 - 44 in US
 - 50 China, 50 Korea, 44 Japan

Regression Results Trust

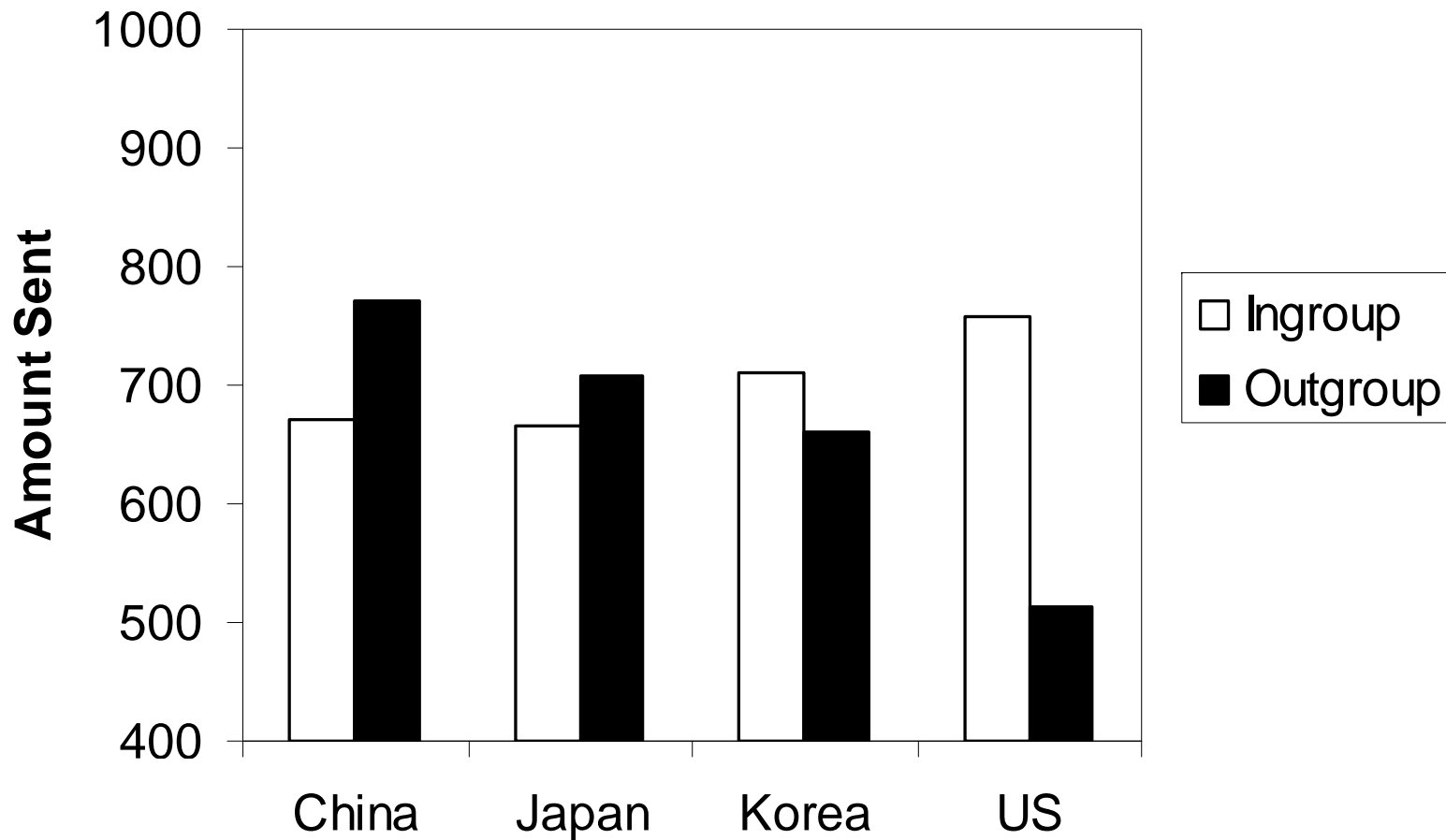
Independent Variable	Regression		
	(i)	(ii)	(iii)
Intercept	538.20**	392.59**	457.45**
Personal Communication	166.34**	262.81*	278.23*
Ingroup	33.62	204.81	221.61
China	82.64	253.45^	278.67^
Japan	44.83	212.65	237.19
Korea	40.31	165.57	69.96
Personal Communication x Ingroup		33.07	29.76
China x Personal Communication		-142.67	-108.99
Japan x Personal Communication		-176.9	-142.45
Korea x Personal Communication		-37.05	-3.51
China x Ingroup		-313.01*	-328.16*
Japan x Ingroup		-292.19^	-309.03^
Korea x Ingroup		-122.28	-137.41
Female			-81.4
Economics education			41.20
Adjusted R ²	0.054	0.059	0.058
Number of Observations	92	92	92

^ p<.10 * p<.05 ** p<.01

Trust and Discussion



Trust and Social Distance

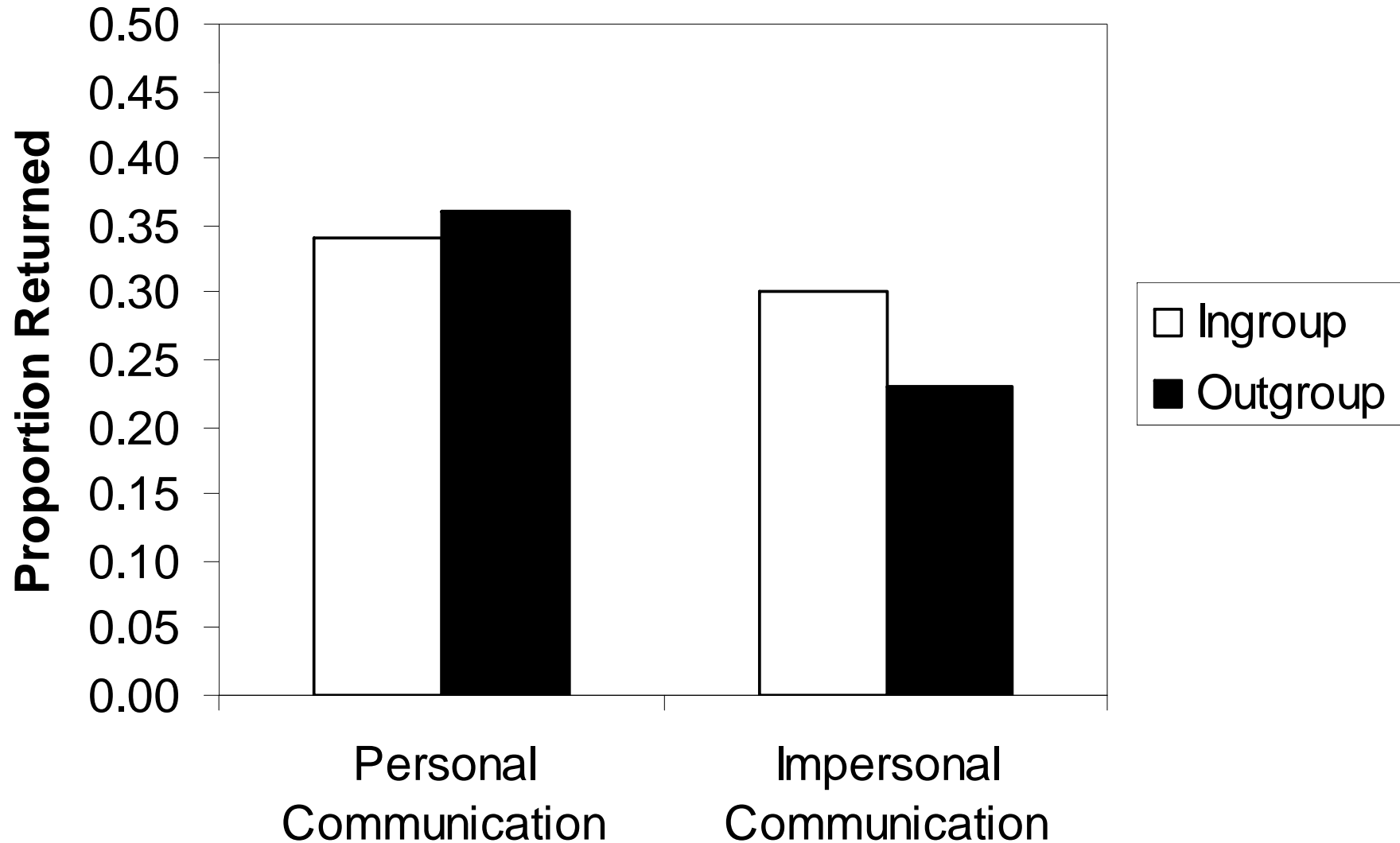


Regression Results Trustworthiness

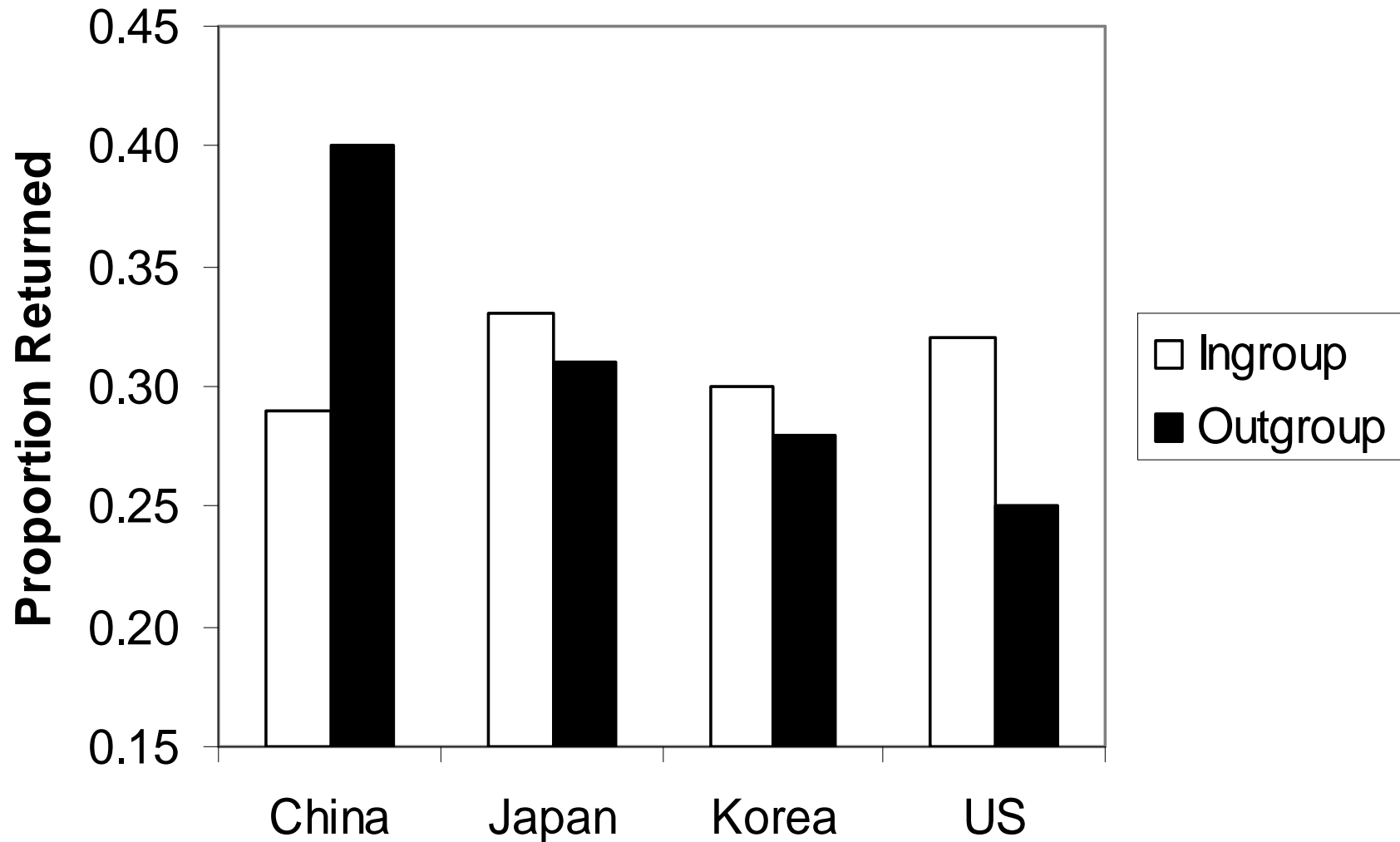
Independent Variable	Regression		
	(i)	(ii)	(iii)
Intercept	0.2372**	0.1393**	0.1053
Personal Communication	0.0650*	0.1915**	0.1331*
Ingroup	0.0219	0.1438^	0.1512^
China	0.0657^	0.2162*	0.2140*
Japan	0.0385	0.0887	0.1155
Korea	0.0174	0.0396	0.0587
Personal Communication x Ingroup		-0.1476*	-0.1345*
China x Personal Communication		-0.1095	-0.0544
Japan x Personal Communication		-0.0302	-0.0030
Korea x Personal Communication		-0.0761	-0.0162
China x Ingroup		-0.1813*	-0.1821*
Japan x Ingroup		-0.0532	-0.0638
Korea x Ingroup		0.0560	0.0481
Female			0.0985**
Economics Education			0.0004
Adjusted R ²	0.0065	0.0801	0.1337
Number of Observations	92	92	92

^ p<.10 * p<.05 ** p<.01

Trustworthiness and Discussion



Trustworthiness and Social Distance



Conclusions and Implications

- Weaker country-level differences in trust and trustworthiness
 - China \geq US = Japan = Korea
- Significant carryover effect of communication
 - Personal (strategy-irrelevant) communication increases trust and reciprocity
- Significant interaction of social distance and country
 - US trusts and reciprocates to ingroup more; China trusts and reciprocates to outgroup more
- Why China reversal?
 - No previous literature on MGP in China
 - Perhaps MGP “didn’t work” (Japan, Korea, but why China?)
 - Our speculation: similarity

Buchan and Croson (2004): Social Distance and Trust

- Trust and trustworthiness decreases with social distance
- Fukuyama claims US more trusting than China, but also large dropoff between kin/non-kin in China
- Test with survey results
 - In the game you just played, how much would you send to XXX and how much would you expect to receive back?
 - In the game you just played, how much would you expect to receive from XXX, and how much would you return to them?

Figure 2: Amount Proposers Would Send Across Countries

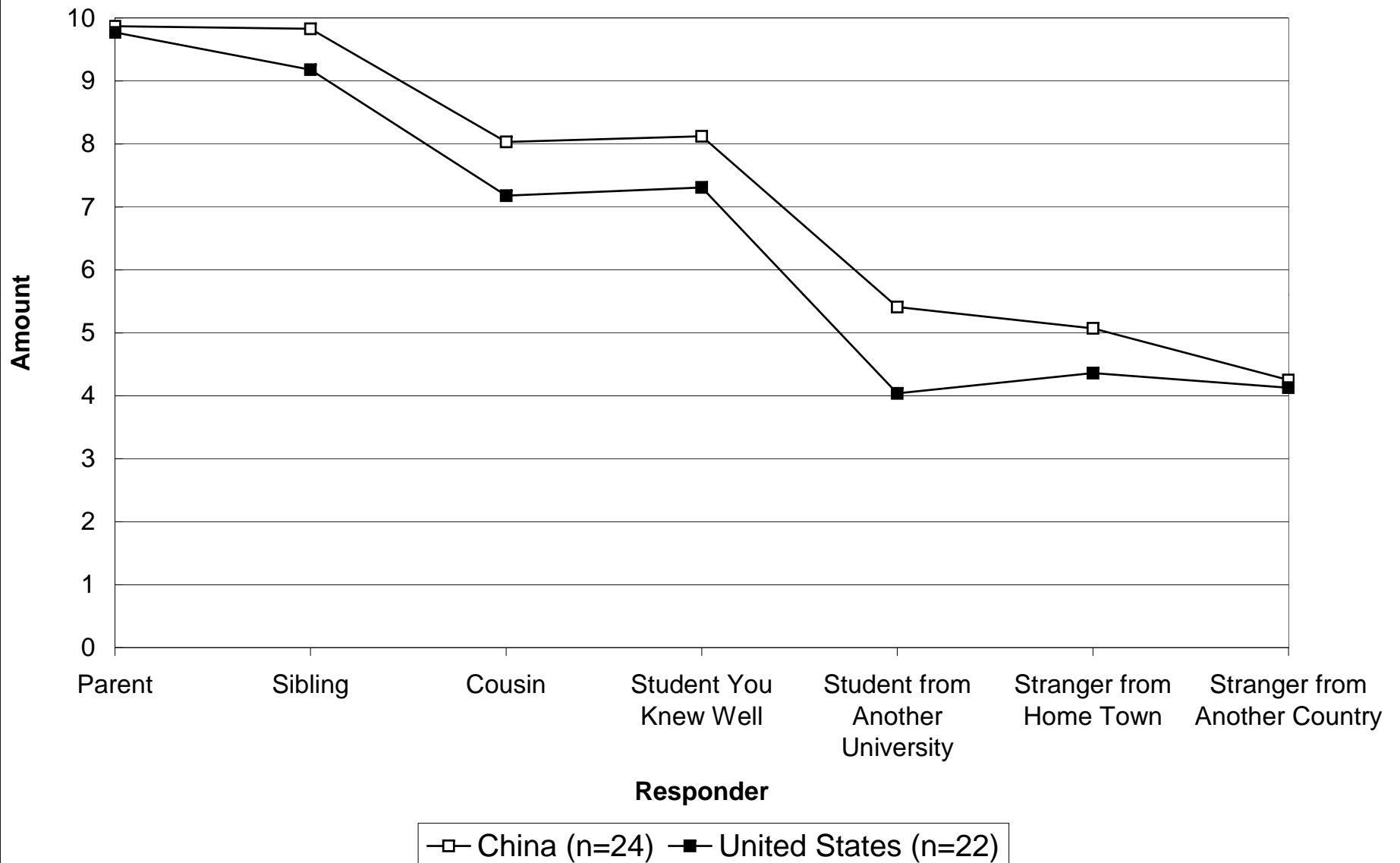
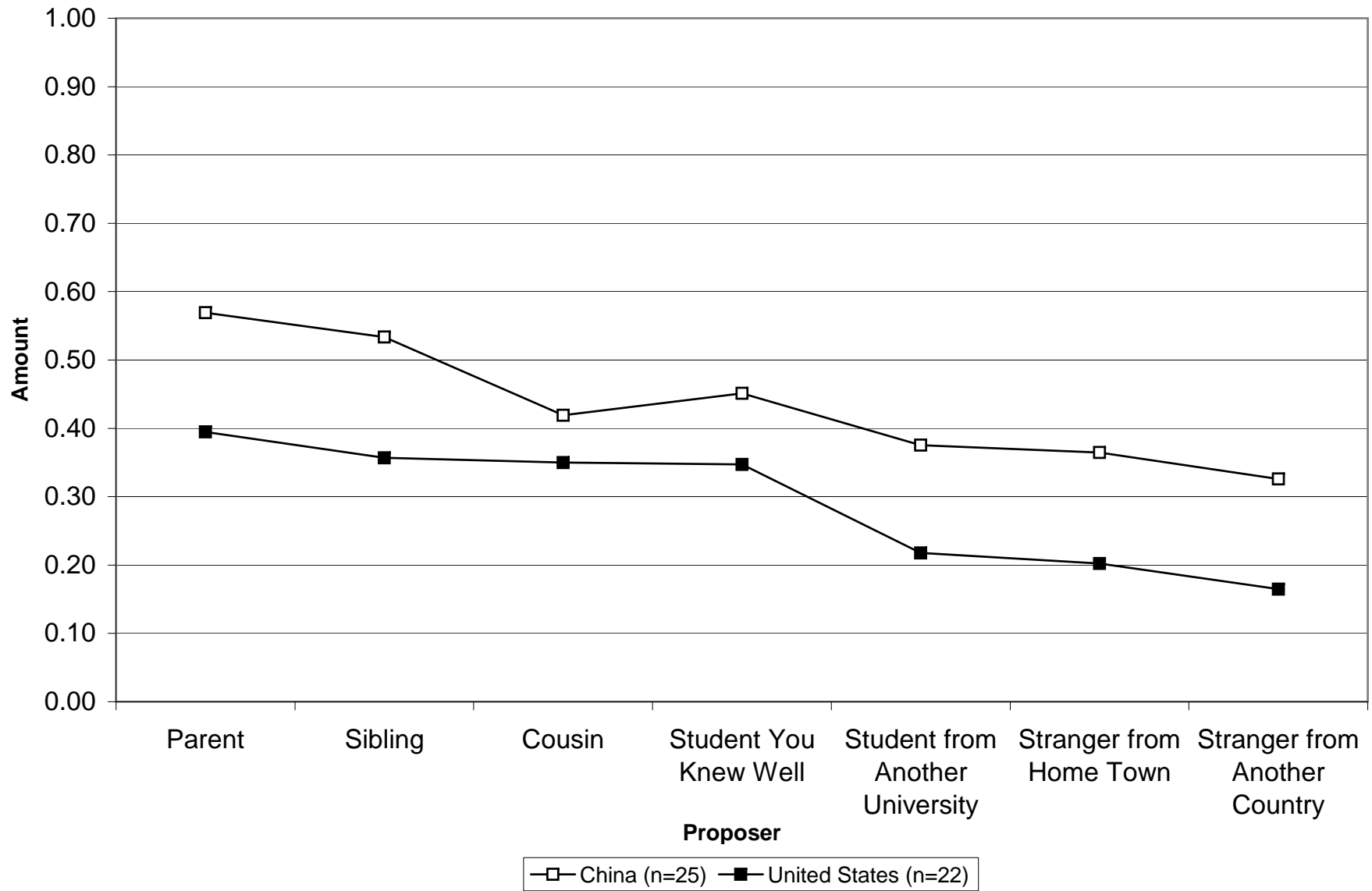


Figure 4: Proportion Responders Would Return Across Countries



Summary

- Chinese trust (marginally) more $F(1,44)=3.48, p<.06$
- Social distance affects amounts sent $F(7,308)=70.17, p<.01$, but no significant interaction with country
- Chinese more trustworthy $F(1,45)=11.53, p<.01$
- Social distance affects proportions returned $F(7,315)=20.06, p<.01$, but no significant interaction with country
- Lack of support for Fukuyama's hypotheses with this (behavioral) data

Gender in the Trust Game (culture)

- Croson & Buchan 1999, Buchan, Croson and Solnick 2008
 - Meta-analysis personality inventories women more trusting (Feingold 1994), but discriminated against populations tend to be less trusting (e.g. Alesina and La Ferrara 2002)
 - Women more trusted (Wright and Sharp 1979 psychological scales, Shaub 1996 survey of auditors, Swamy et al. 2001 less likely to accept bribes)
- Previous gender experiments
 - Ultimatum games
 - Eckel & Grossman 1998a: chivalry and solidarity (accept less from women)
 - Solnick 1998: higher demands from women proposers
 - Both lower offers to women than to men
 - Both offers from women and men same
 - Dictator games
 - Eckel & Grossman 1998b: women give more than men
 - Bolton & Katok 1995: no difference in genders
 - Andreoni & Vesterlund 1998: women divide evenly, men equitably
 - Large literature in psychology, mostly PD games
- Examine trust and trustworthiness by gender (large follow-on literature)

Croson and Gneezy, forthcoming JEL

Table 3: Trust Games				
Study	Experimental details	Trust	Reciprocity	Controls included?
Croson and Buchan 1999	continuous game	M=F	M<F	yes
Schwieren and Sutter 2004	continuous game	M=F	M<F	no
Clark and Sefton 2001	sequential PD	M=F	M=F	yes
Cox and Deck 2004	discrete game	M=F	M=F	no
Bohnet 2006	continuous game (study 1)	M=F	M=F	yes
Ashraf et al. 2006	continuous game	M=F	M=F	yes
Eckel and Wilson 2004a	discrete game, partner choice	M>F	M=F	yes
Migheli 2006	continuous game	M>F	M=F	yes
Innocenti and Pazienga 2006	continuous game	M>F	M=F	no
Slonim 2004	mostly continuous game, partner choice	M>F	M=F	yes
Kanagaretnam et al. 2006	continuous game	M>F	M=F	yes
Snijders and Keren 2004	discrete game	M>F	M<F	yes
Chaudhuri and Gangadharan 2004	continuous game	M>F	M<F	no
Buchan et al 2008	continuous game	M>F	M<F	no
Slonim and Garbarino 2006	mostly continuous game	M>F	na	yes
Bellemare and Kroger 2005	continuous game	M<F	M>F	yes
Eckel and Wilson 2004b	discrete game	M>F written	M=F	yes
Ben-Ner et al. 2004	sequential dictator, vary pairings	na	M<F	yes
Eckel and Grossman 1996	sequential dictator	na	M<F	yes
Bohnet et al. 2008	Betrayal aversion game	M=F Kuwait M>F	na	no

Croson & Buchan 1999

- No impact on trust, women more trustworthy
 - 37% vs. 29%: Wilcoxon $p=.0183$

	(1) PR	(2) PR	(3) PR	(4) PR	(5) PR _{US&China}
Intercept	.3299**	.3307**	.3352**	.1294**	.1004^
Gender (F)	.0443*	.0469*	.0603**	.0523**	.0726**
Social Distance		.0124	.0147	.0147	-.0098
Discussion		-.0106	-.0117	-.0281^	-.0172
China			.0272	.0136	.0367^
Japan			.0311	.0260	
Korea			.0072	.0132	
Amount Sent				.0003**	.0003**
R ² adj.	.0464	.0345	.0484	.2852	.4481
Observations	94	94	94	94	46
		** $p<.01$	* $p<.05$	^ $p<.10$	

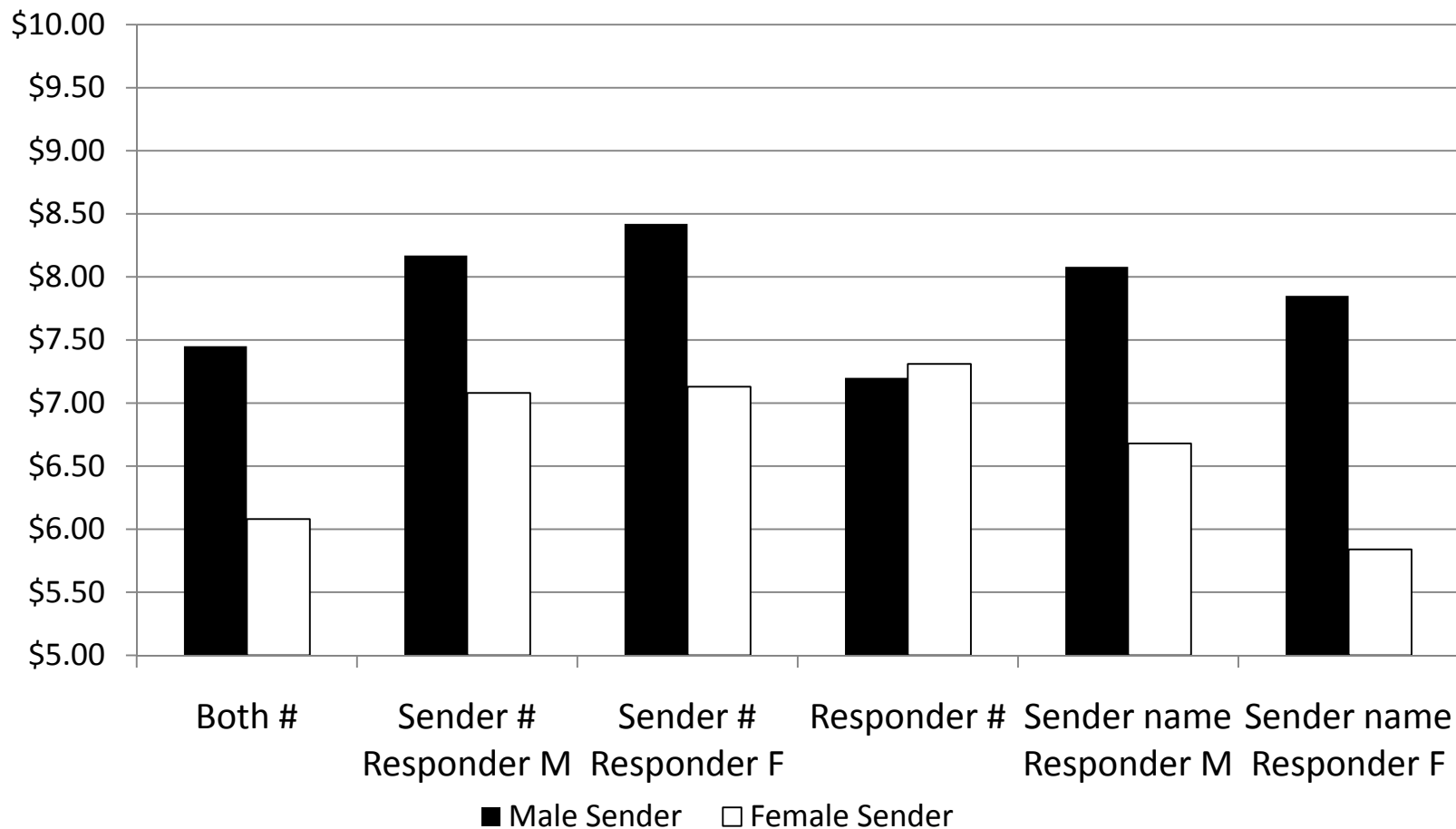
- Obligation measure significantly different ($p<.05$)

Further Explorations of Gender (Buchan, Croson and Solnick 2008)

- More trusting, more trusted, more trustworthy
- Treatments
 - Control: No gender information (identified by number)
 - Sender known: Sender's gender known (first (gender-specific) name)
 - Responder known: Responder's gender known
 - Both known: Both gender known
- 754 individuals (377 pairs) (students)
- Paid earnings, randomly assigned to treatments
 - Double-blind
- Ex-post check on gender identifiability of names (over 95% accurate)

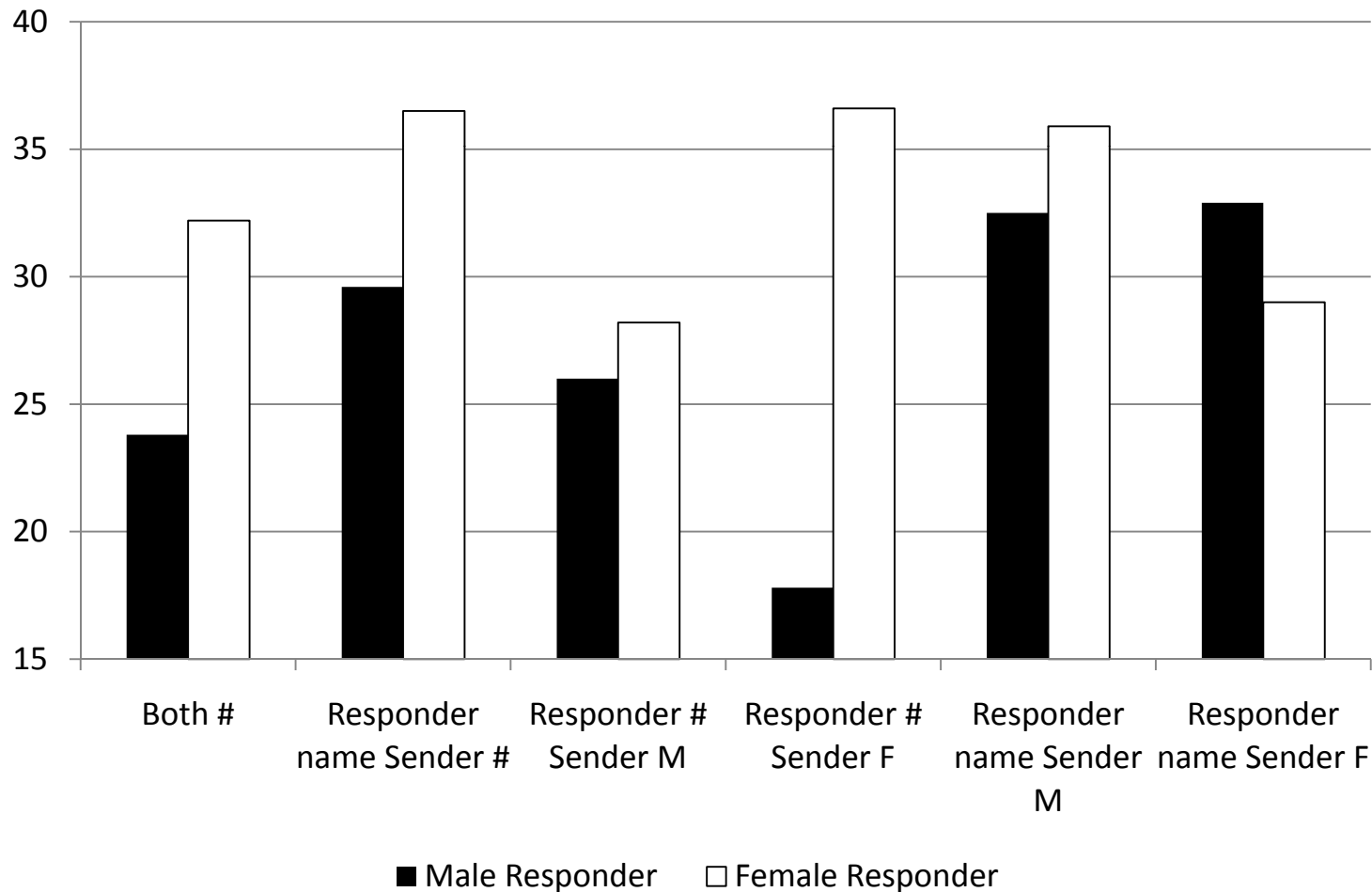
Results (Trust)

- Men trust more than women (\$7.80 vs \$6.66 on average)



Results (Trustworthiness)

- Women are more trustworthy (return higher percentage) (33.2% vs 28.8%)



Results (Trusted)

- Men and women are equally trusted (when responder's gender is known, \$7.69 vs \$7.68)
 - No treatment effect
 - By men and women
- Puzzling since women are more trustworthy

What Causes Gender Differences?

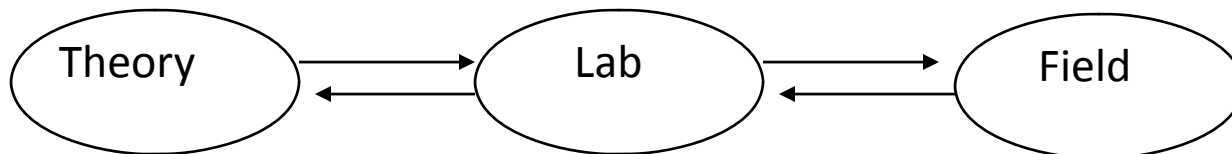
- Women felt more obligated to send money to the responder (3.63 vs 2.85 7-point likert scale)
 - More likely to send something (vs nothing)
 - ...but send less (fulfilled obligation)
- Women felt more obligated to return money to the sender (5.45 vs 5.14)
 - Obligation mediates gender difference in response rates
- Positive relationship between expected return and amount sent
 - Relationship significantly stronger for males than for females (men more instrumental)

Current Work

- De Oliveira, Croson and Eckel
 - Lab giving to fund local public goods by poor (African-American and Hispanic)
 - Trust in organizations (as well as individuals) predicts giving
- Leonard, de Oliveira and Croson
 - Trust increases size of social network
 - Significant for Hispanics, not for African-Americans
 - Social networks increases self-reported donation and volunteering likelihood
 - Trust also increases self-reported likelihoods
 - Significant for African-Americans, not for Hispanics

Overall Conclusions

- Stream of research experimentally examines the existence and extent of trust and reciprocity
 - Some factors: country, directness, social distance, gender
 - Exist many more
- Goal is to aid in our understanding of trust and trustworthiness, its causes and its effects
 - Enable us to better predict when trust will emerge
 - Enable us to construct strategies to generate trust between individuals, within and between organizations, within and between countries
- Help inform theory and field studies



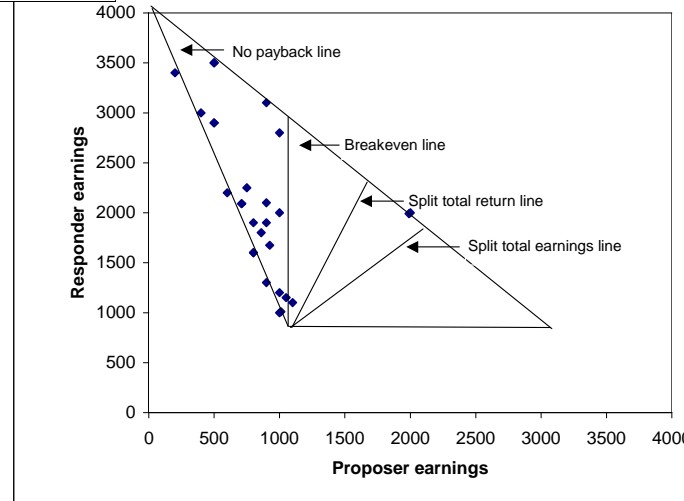
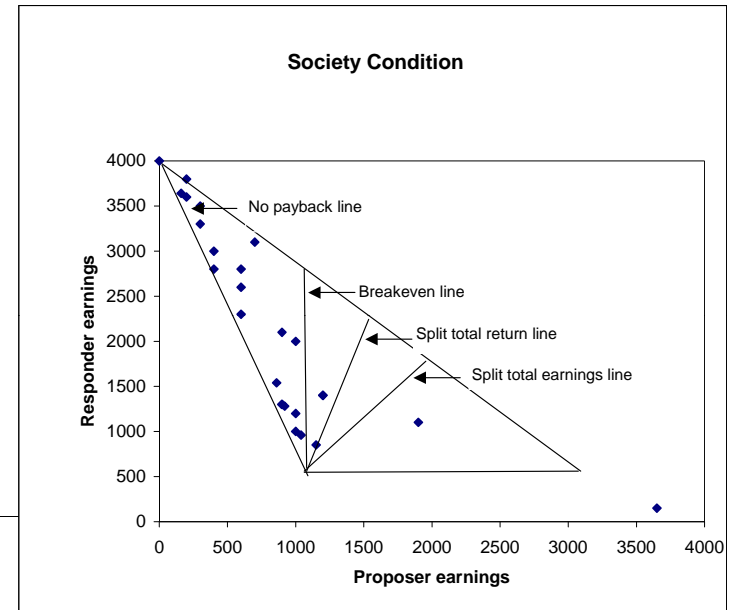
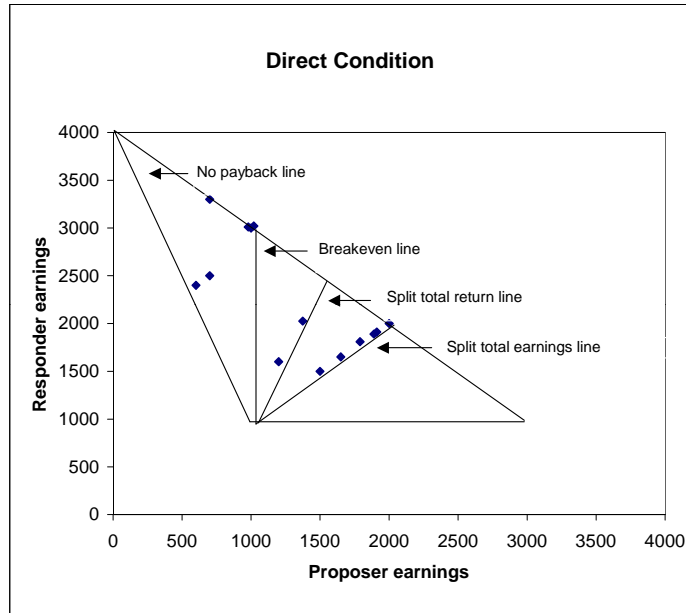
Additional (Optional) Slides

- Nancy/Robyn paper

Preview of Results

- Examine experimentally the existence and extent of direct and indirect trust and reciprocity (trustworthiness) in different countries
 - Go beyond simply demonstrating existence of these factors—focus on boundaries, what influences their extent (directness, social distance, gender)
- Main effect of directness
 - As trust and reciprocity get more indirect, individuals trust and reciprocate less
- Main effect of country
 - Trust: China = US > Japan = Korea
 - Reciprocity: China = Korea > Japan = US
- Interaction effects
 - Boundaries of trust and reciprocity differ in the different countries

Distribution of Earnings in US



Descriptive Statistics (Trust)

	Condition			
	Direct	Group	Society	Mean
American	782.14 (219.79)	488.64 (336.96)	505.46 (357.90)	554.07 (341.92)
Chinese	728.57 (246.29)	482.72 (245.59)	477.17 (347.28)	534.07 (308.34)
Japanese	504.28 (282.48)	508.83 (289.98)	236.25 (294.14)	398.89 (315.73)
Korean	526.78 (263.56)	443.25 (264.63)	330.17 (282.17)	414.72 (278.26)
Mean	635.44 (275.87)	480.75 (285.47)	387.26 (336.22)	474.15 (310.86)

Descriptive Statistics (Reciprocity)

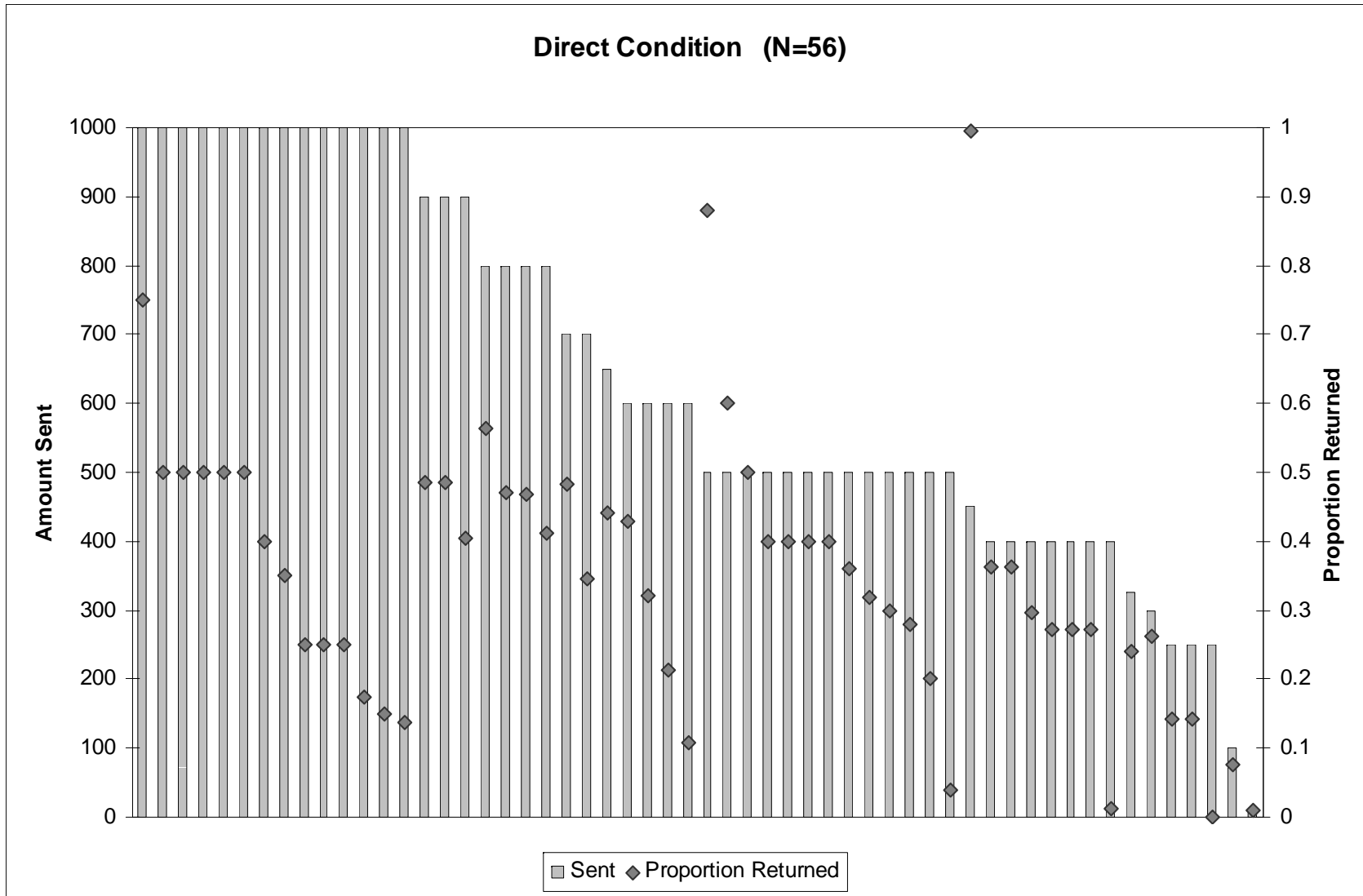
	Condition			Mean
	Direct	Group	Society	
American	0.319 (0.15)	0.114 (0.129)	0.130 (0.209)	0.162 (0.185)
Chinese	0.409 (0.145)	0.265 (0.203)	0.154 (0.115)	0.248 (0.183)
Japanese	0.249 (0.179)	0.147 (.130)	0.092 (0.212)	0.146 (0.183)
Korean	0.425 (0.256)	0.236 (0.153)	0.208 (0.214)	0.263 (0.215)
Mean	0.350 (0.196)	0.187 (0.163)	0.146 (0.194)	0.200 (0.191)

Is this Trust/Reciprocity and not Altruism?

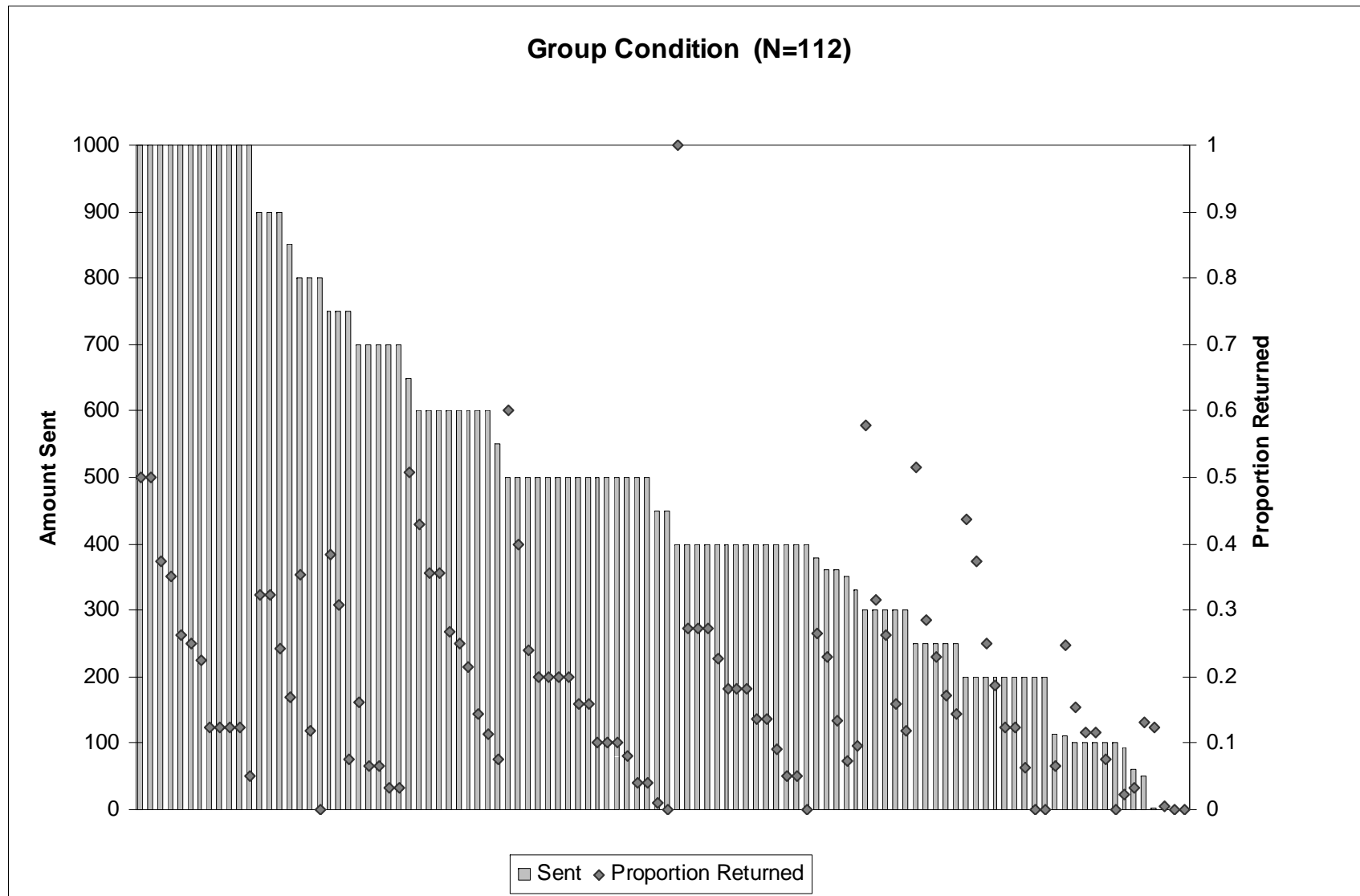
- Definition
 - “a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another.” Rousseau *et al.* 1998
 - Altruism or cooperation, in contrast, involves simple self-sacrifice for the collective gain and is not reliant on expectations of others’ behavior (senders), or previous actions of others’ (responders)
 - Questionnaire responses
 - How much do you trust your counterpart to return at least as much as was sent?
 - How much do you expect your counterpart to return?
 - Significantly correlated with amount sent

 - How obligated to you feel to return money to your counterpart?
 - Significantly correlated with proportion returned
- Other studies have examined this question in this game, with mixed results
 - Cox 2001 (alt), Bolton Brandts & Ockenfels 1998 (t&r), Gneezy Guth & Verboven 2000 (t&r), Charness & Haruvy 1999 (both), Jacobson & Sadrieh 1996 (t&r), ...
- Useful for motivation, but not critical for us

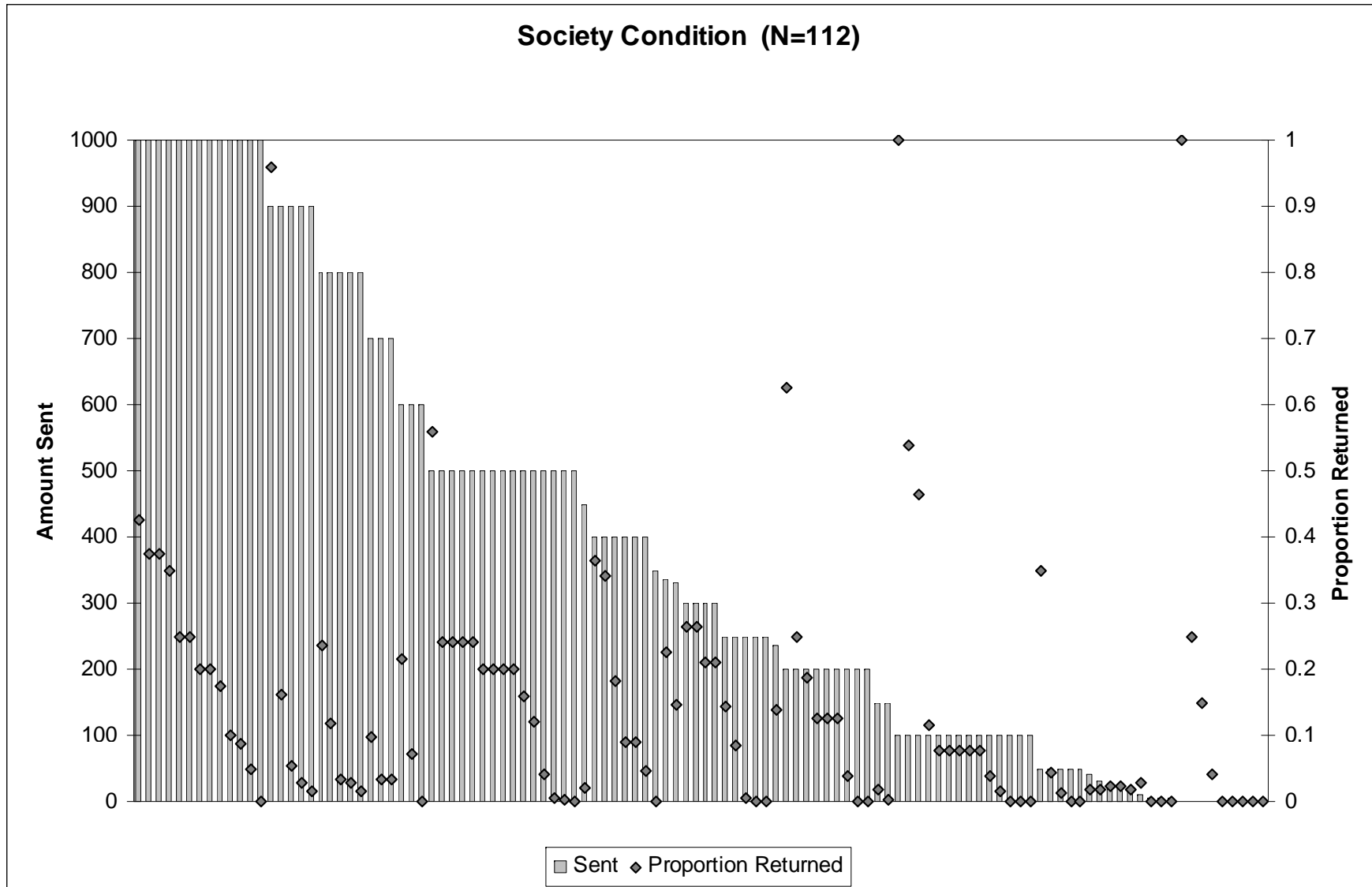
All Countries (Pairs)



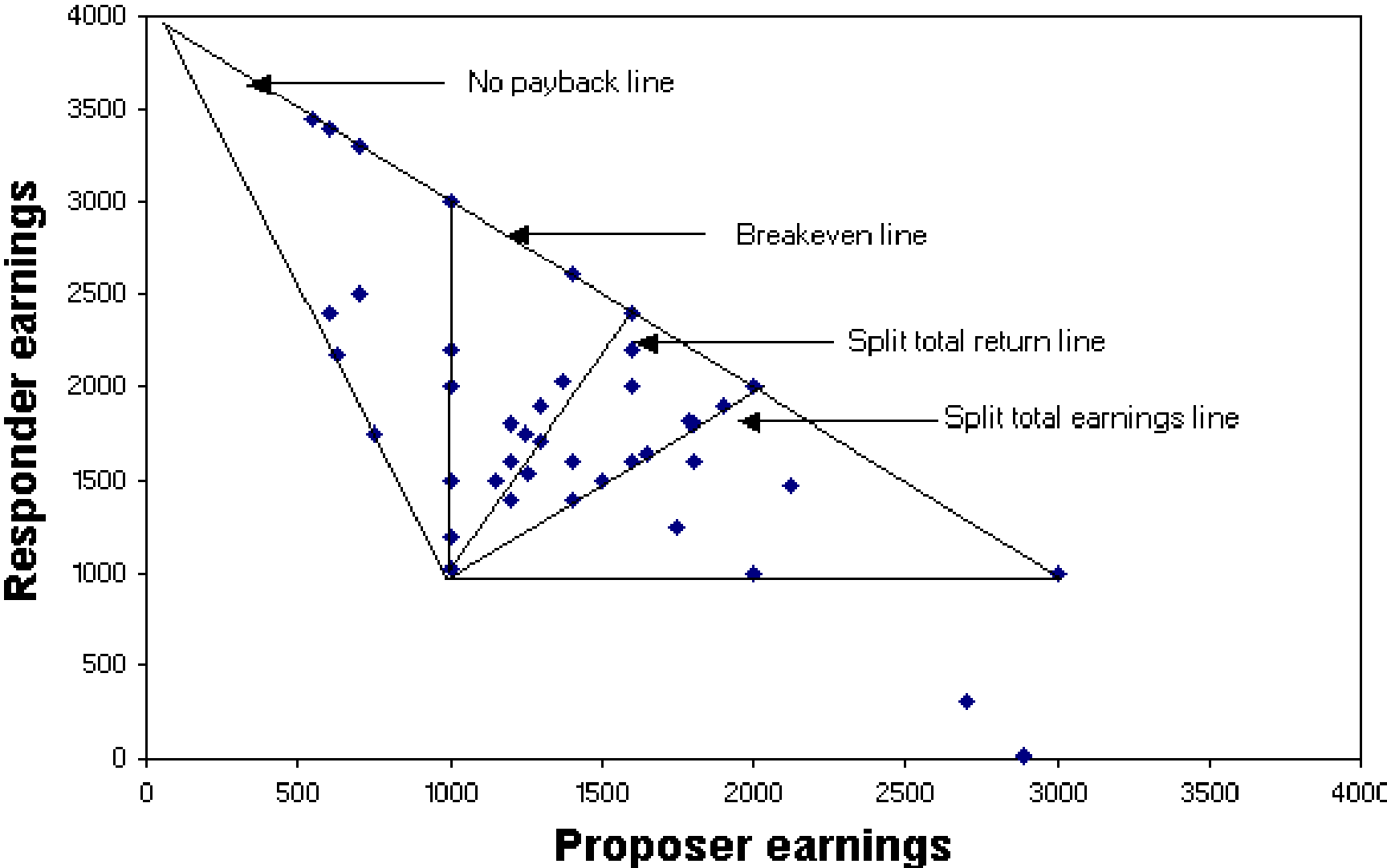
All Countries (Group)



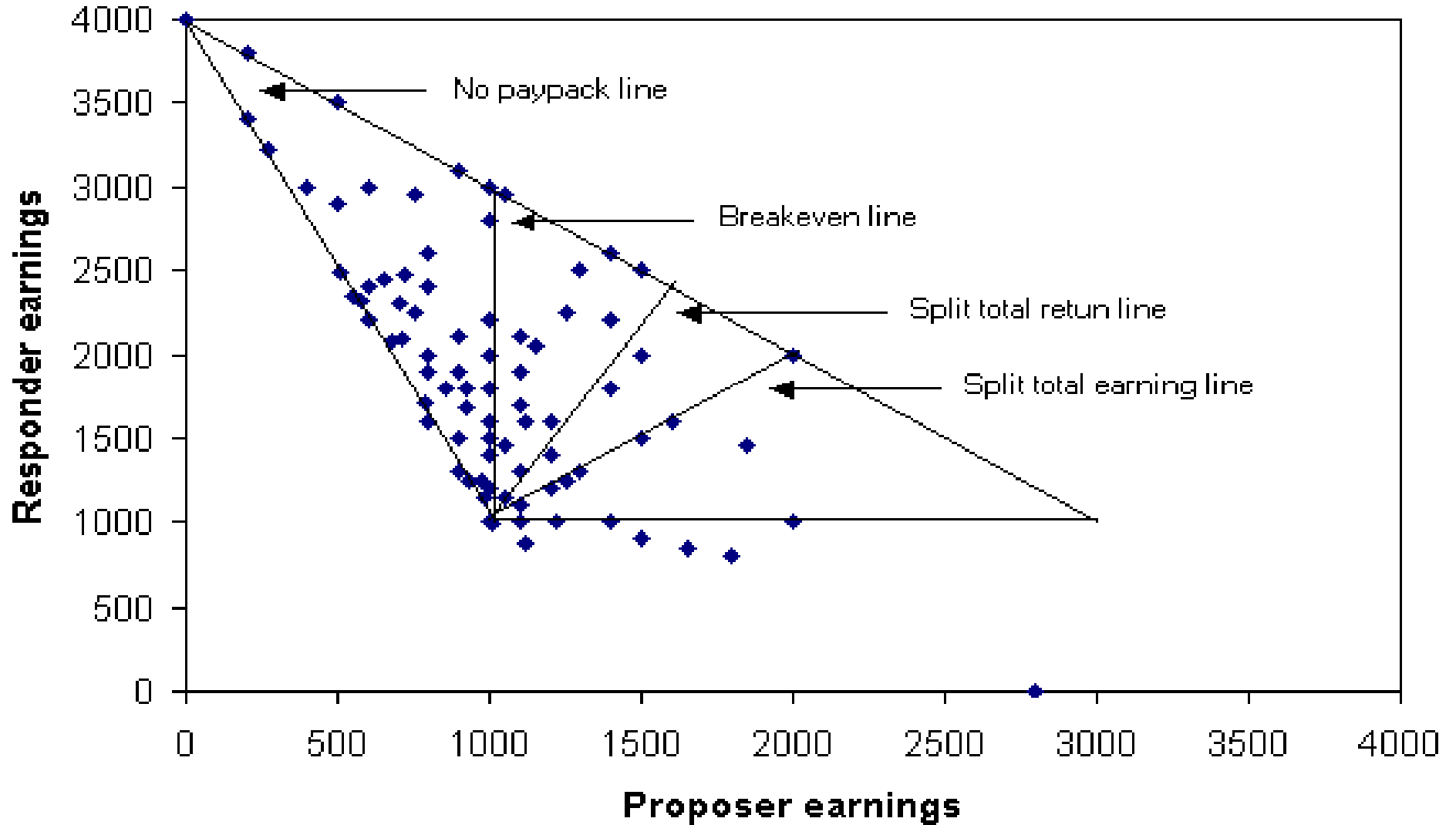
All Countries (Society)



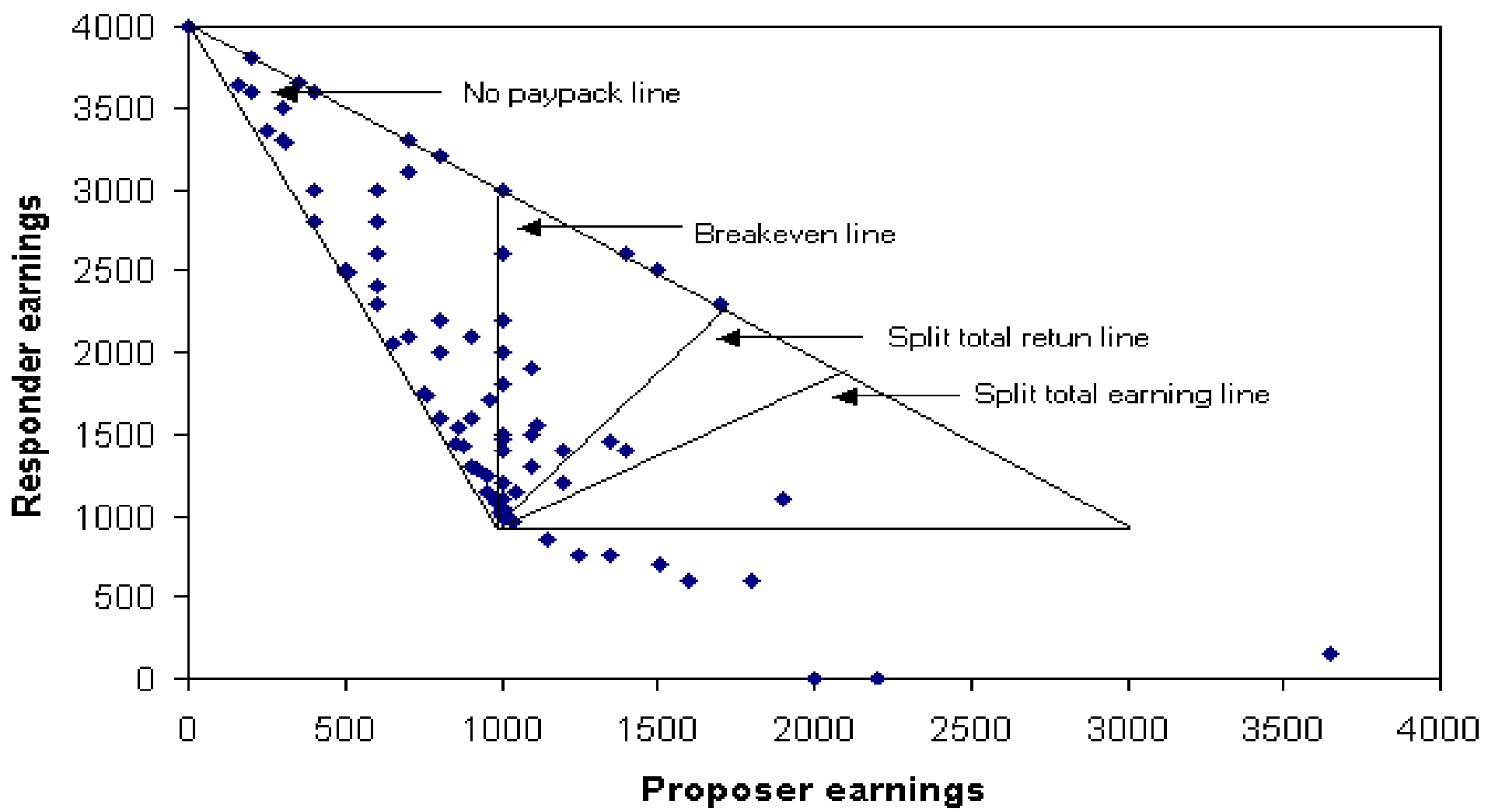
Distribution of Earnings Internationally Pairs



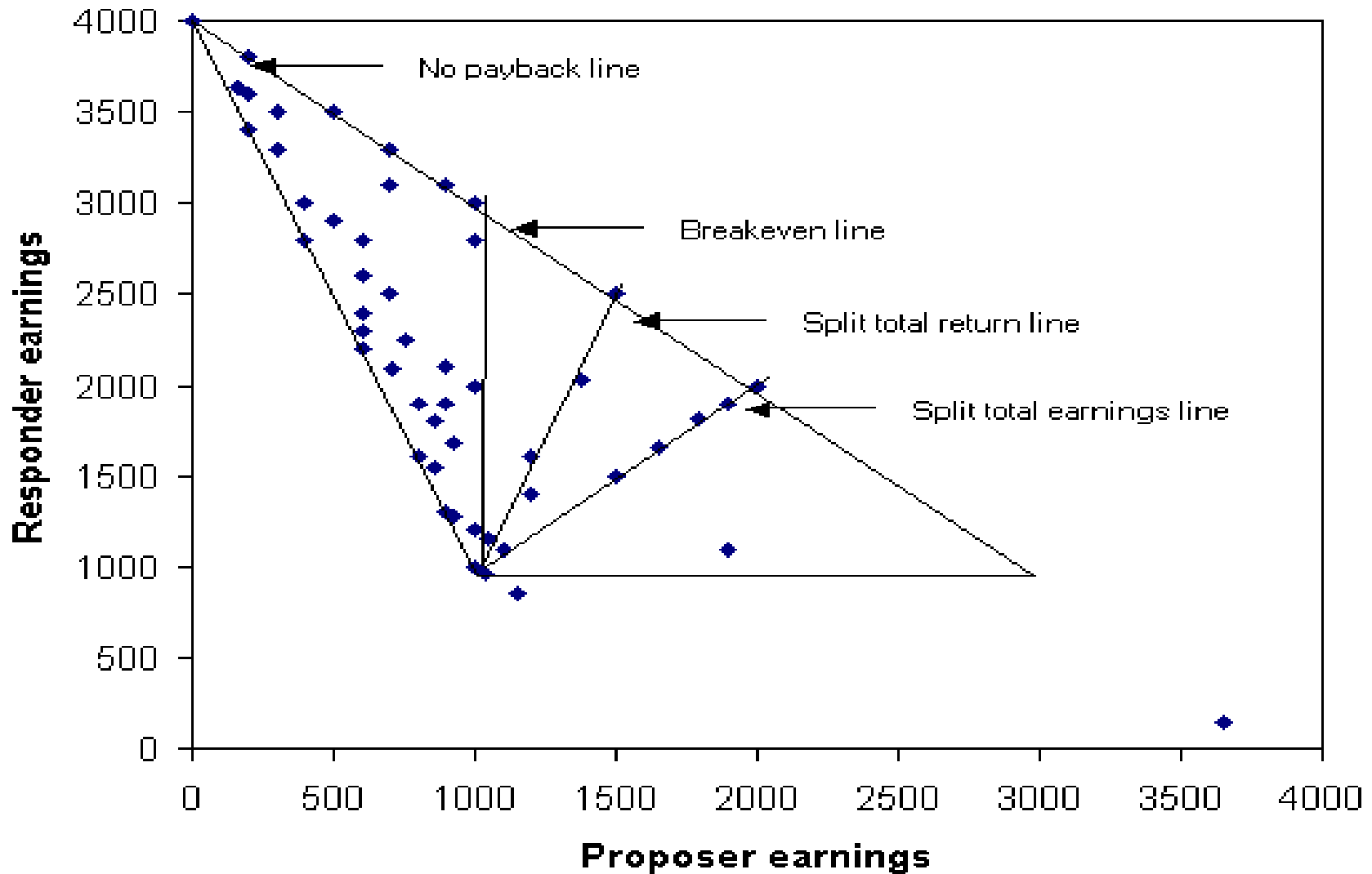
Distribution of Earnings Internationally Group



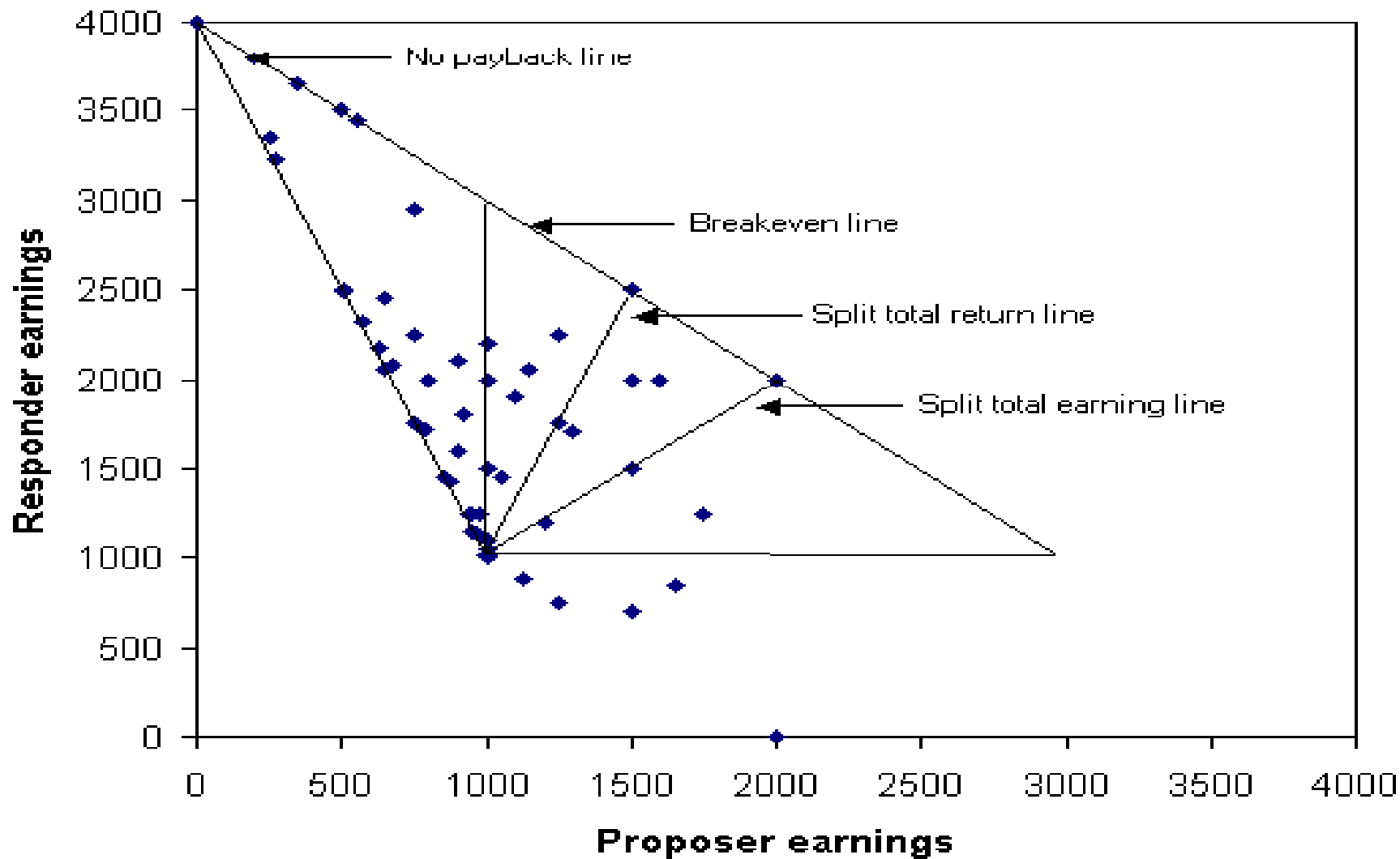
Distribution of Earnings Internationally Society



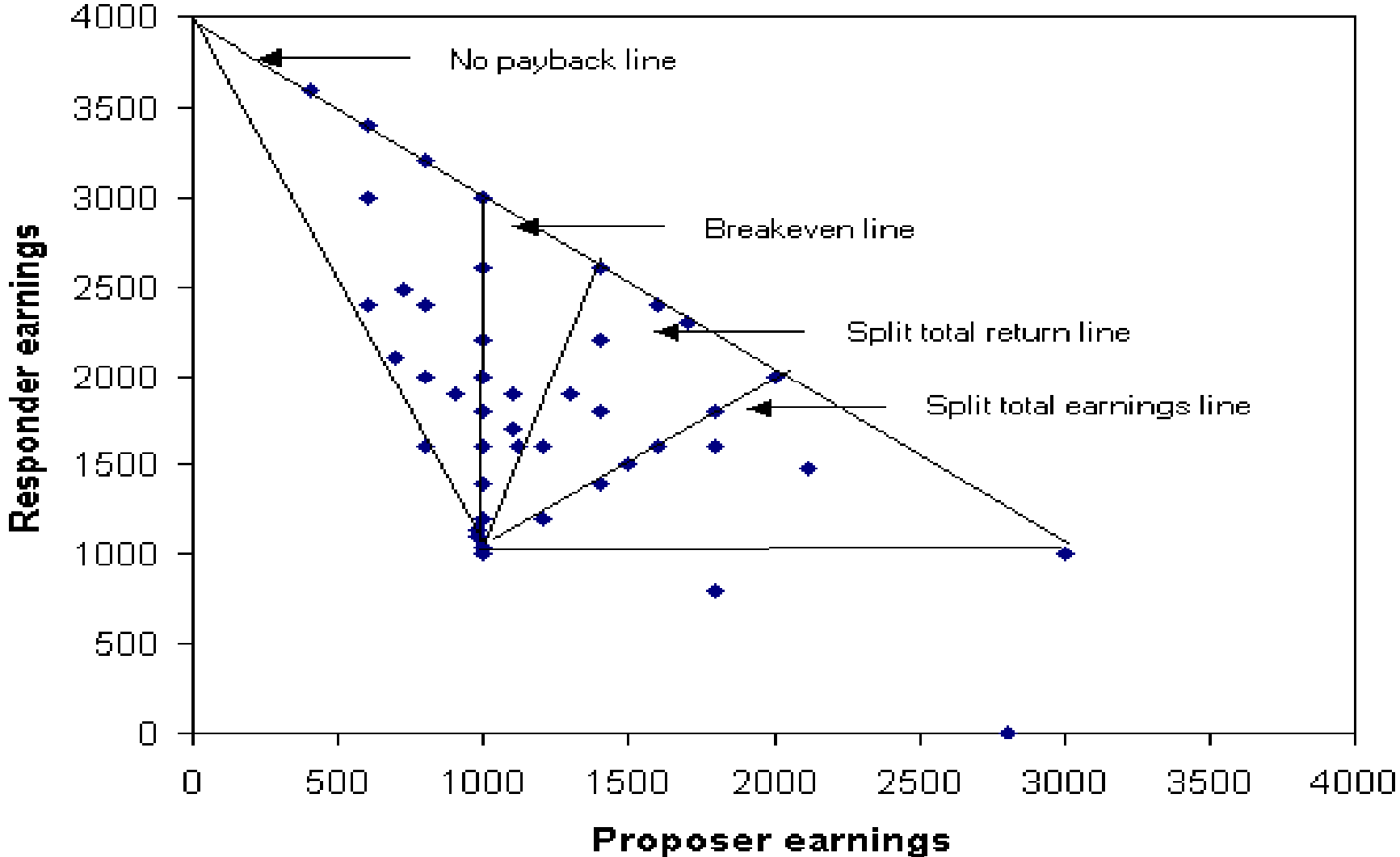
Distribution of Earnings US (all treats)



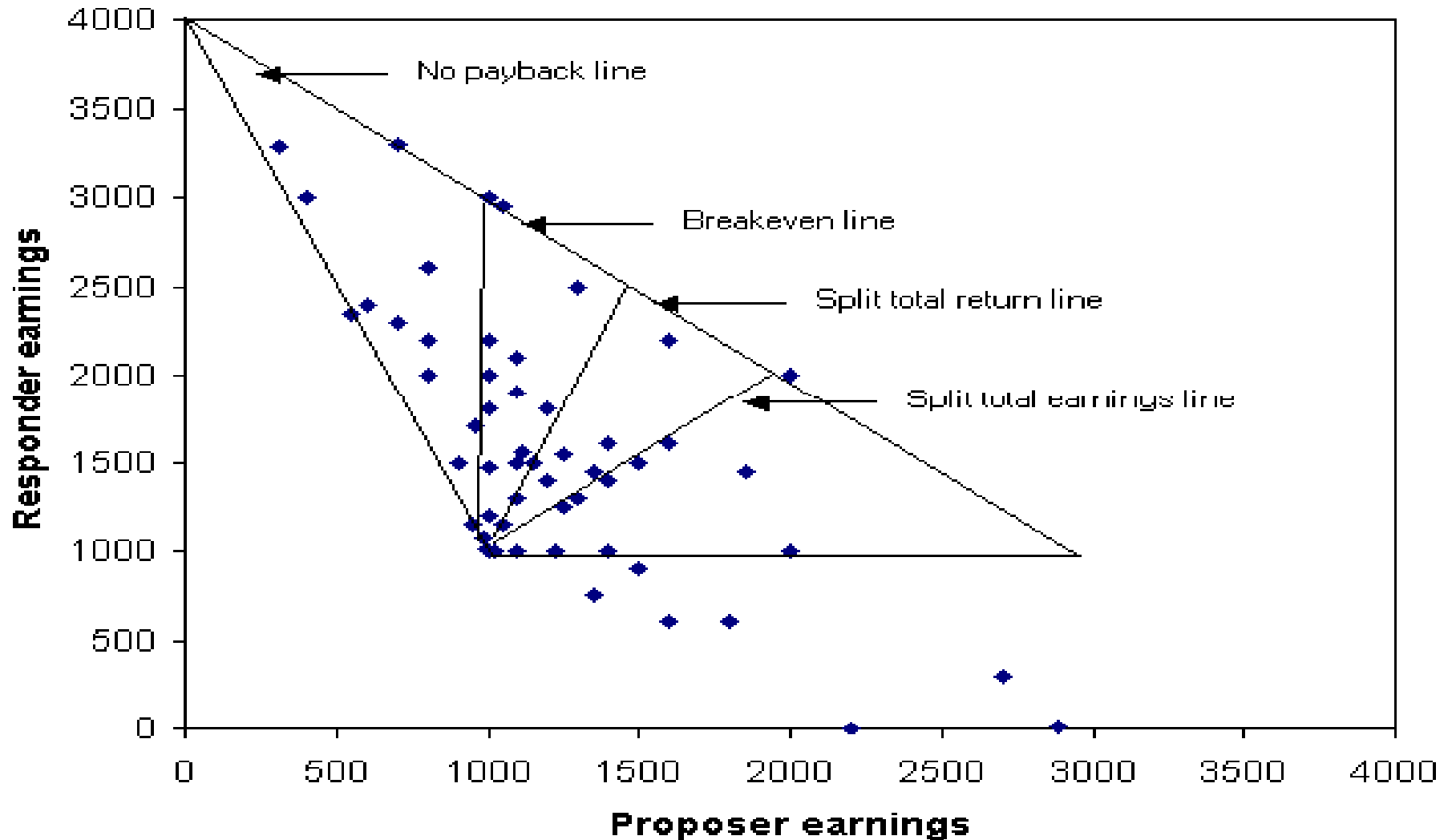
Distribution of Earnings Japan (all treats)



Distribution of Earnings China (all treats)



Distribution of Earnings Korea (all treats)



Additional (optional) slides

- Nancy/Eric

Trust and Social Distance

	China	Japan	Korea	US
Ingroup	675 (206)	666 (288)	791 (301)	758 (291)
Outgroup	767 (178)	707 (326)	623 (347)	514 (268)

Reciprocity and Social Distance

	China	Japan	Korea	US
Ingroup	29%	33%	33%	31%
	(.11)	(.11)	(.14)	(.16)
Outgroup	40%	31%	26%	25%
	(.13)	(.20)	(.21)	(.20)

Results (Descriptive)

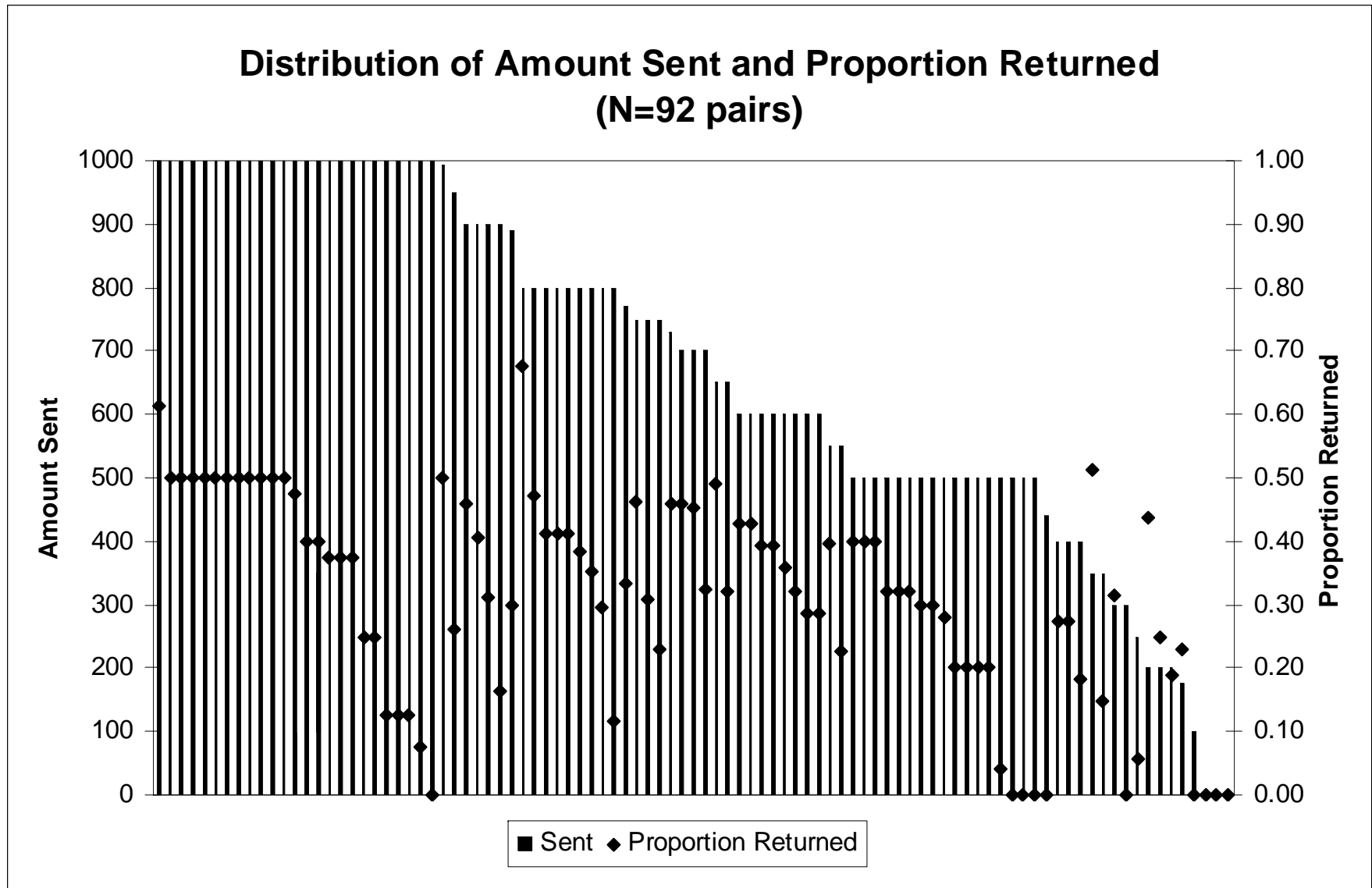


Figure 6: Sending in United States

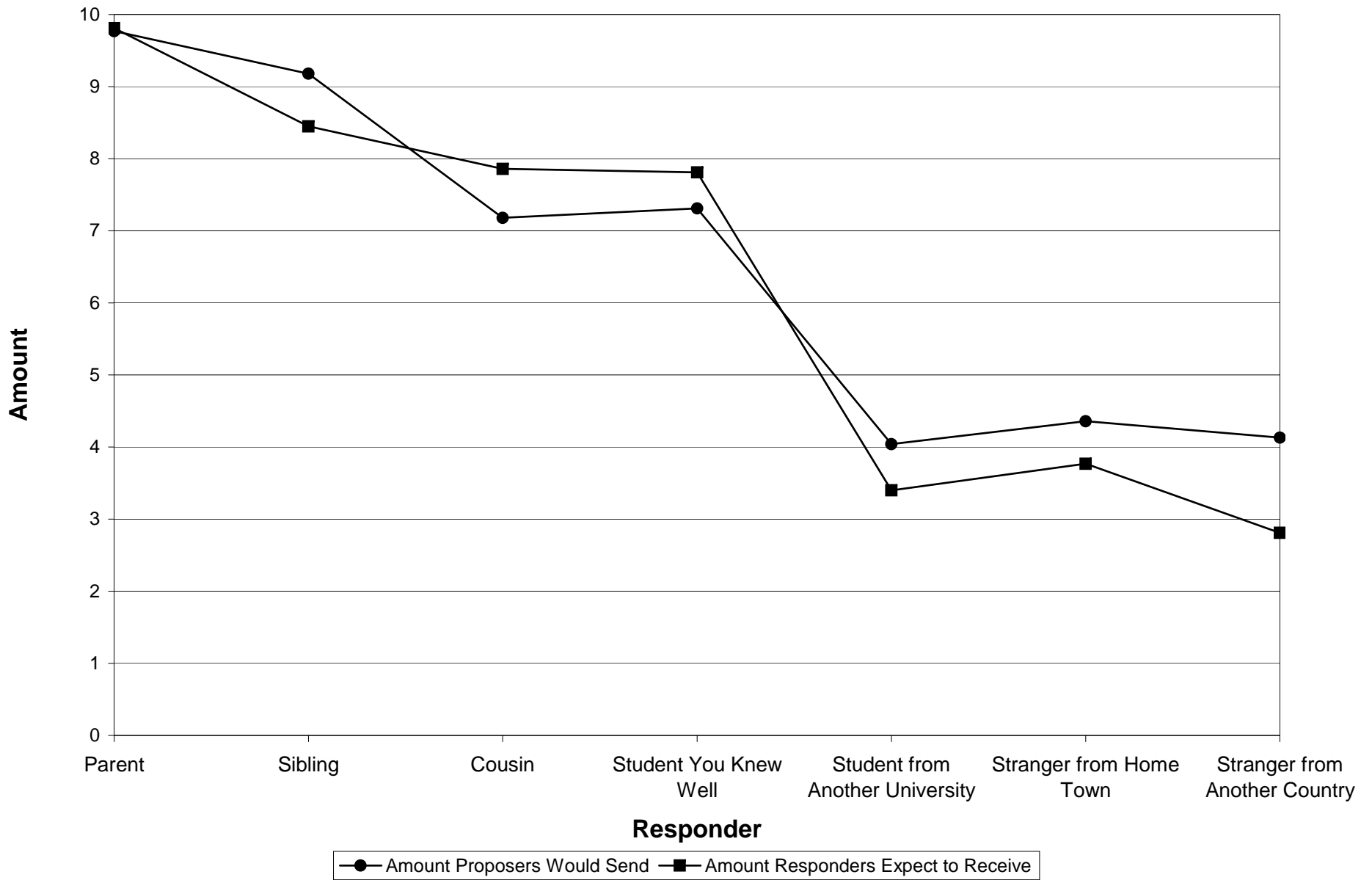


Figure 7: Returning in United States

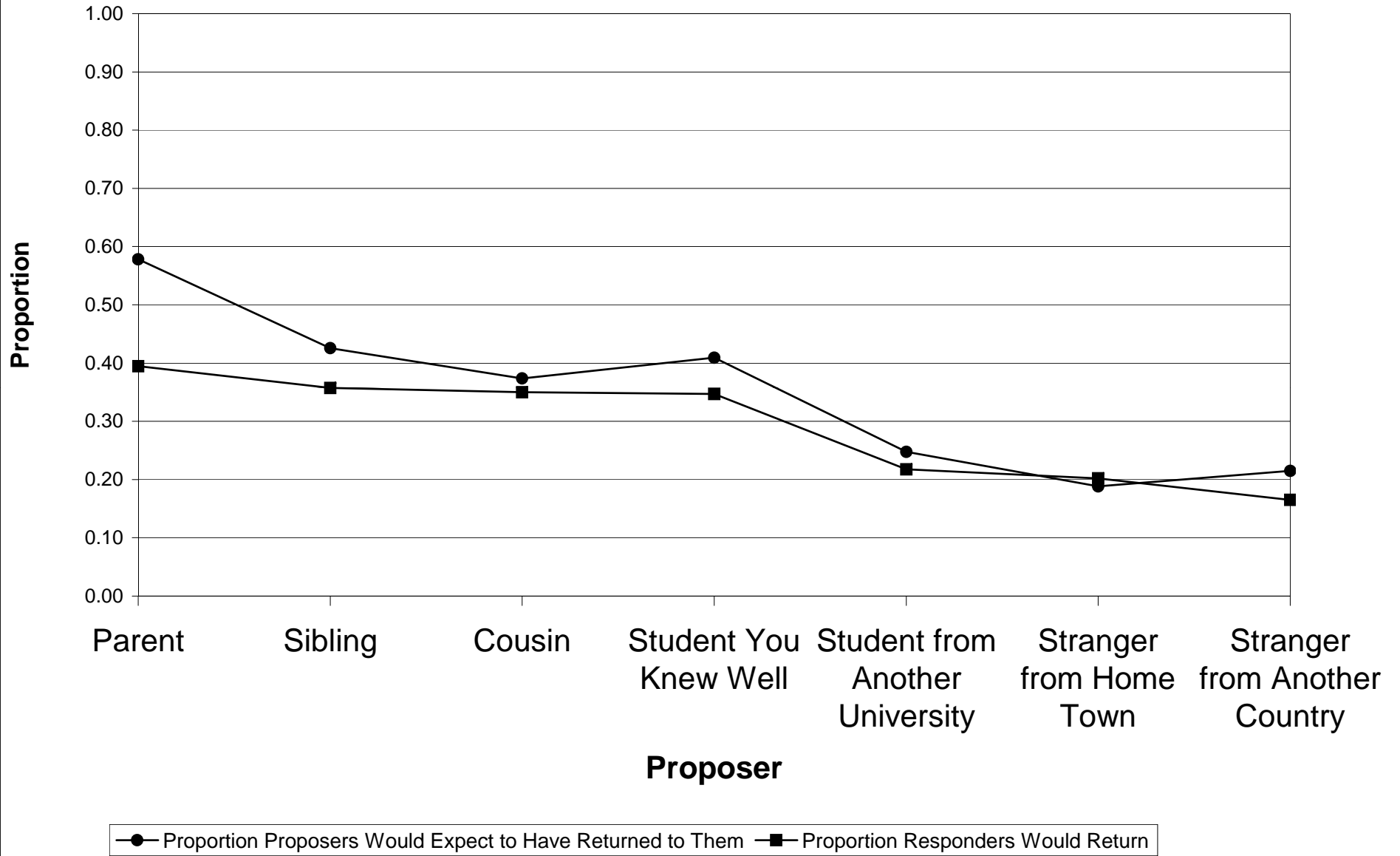


Figure 8: Sending in China

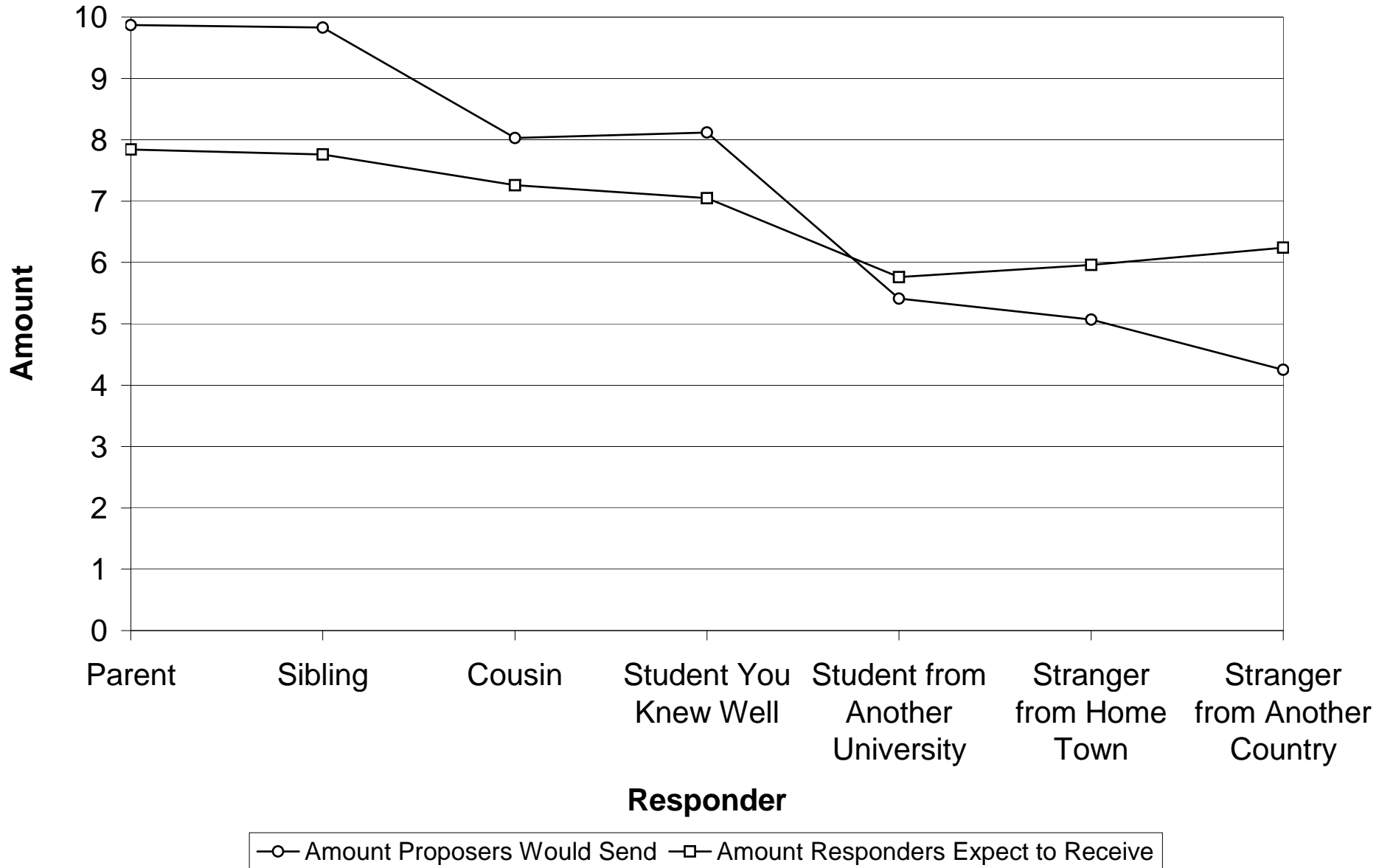


Figure 9: Returning in China

