Appendix A

Individualism, Collectivism, and Trade

A.1 Experiment Instructions

This part presents what subjects see on their screens during the experiment. Information would be given to the subjects in the sequential manner based on their decisions. Subjects will assume their roles (i.e. farmer, local merchant, or traveling merchant) in the beginning of the experiment according to the triad task results. The only difference between WE and SE treatments is the court enforcement power. Therefore, here we only give the WE narration.

A.1.1 The Narrations

The common stage

Farmers' narration (period 1) You are a farmer in a small county. You have to work hard around the clock to harvest your products. You can do two things with your harvest. First, you can give your harvest to a local merchant who sells some of it for you. This is a long-standing relationship, and each time you deal with the local merchant, both of you make 8ECU.

Second, you can keep your harvest and try to sell everything yourself. In this case both you and the local merchant payoff are equal to 4ECU.

You can either keep your harvest or let a local merchant sell it in the local market.

Keep your harvest   *Trade with local merchant*

Local merchants' narration (period 1) You are a merchant who sells goods in a local market. You have a long-standing relationship with a farmer who often gives you his harvest to sell at the market. When the farmer gives you the harvest, each of you gets 8ECU.

If farmer decides to not deal with you then you have to live off of your garden and both of you get 4ECU.

Ready to go on

Travelling merchants' narration (period 1)   You are a travelling merchant accustomed to dealing with different people and markets. To make your living selling merchandise, you have to travel all year long. Farmers work hard around the clock to collect their harvest. If you travel to a village and find a farmer who is willing to trade you his harvest, you both can possibly gain from trade. But if you do not find a farmer or if the farmer is unwilling to trade with you, then you will have no opportunity to trade. Your payoff will be 4ECU.

Ready to go on

Traveling merchants' narration (Period 2 to 4)   You traveled this period but you were unsuccessful in finding a farmer to trade with.

Ready to go on

Farmers' narration (periods 2 to 4)   You have two options. Keeping your harvest for yourself, this pays you 4ECU, or giving your products to a local merchant who sells them and pays you 8ECU.

Keep your harvest   *Trade with local merchant*

The NE treatment

Farmers' narration (periods 5)   A travelling merchant has arrived in your county. Travelling merchants know different people and foreign markets. They travel all year long selling merchandise to the highest bidder. This merchant has offered to take your harvest and sell it in a foreign market.

After selling the harvest for 32ECU, the travelling merchant could either share the profit with you or take all the money and run.

If the travelling merchant shares, you both get 16ECU. But if the travelling merchant takes the money and runs, then you will get 0ECU (the travelling merchant gets 32ECU).

However, if you give your products to the travelling merchant, you can't also trade with the local merchant. The local merchant will only get 4ECU since you are no longer their trade partner.

All your previous options are still available to you. You can keep your harvest for yourself, trade the harvest with the local merchant or let the travelling merchant take the products to the foreign market.

Keep your harvest   *Trade with local merchant*   *Trade with the traveling merchant*

Farmers' narration (periods 6 to 8)   You still can keep your harvest for yourself or to trade it to the local merchant. If you keep the harvest for yourself then you will get 4ECU. If you trade with the local merchant you get 8ECU.

A new travelling merchant has approached you offering the same potential as the previous travelling merchant. This merchant can sell your harvest for a profit of 32ECU in a foreign market.

If you decide to trade with the new travelling merchant and he/she shares the profits you both get 16ECU. But if he/she takes the money and runs, you get 0 (i.e. travelling merchant gets 32ECU).

Remember, if you give your products to the travelling merchant, you can't also trade with the local merchant. The local merchant will only get 4ECU since you are no longer their trade partner. You have three options.

Keep your harvest   Trade with local merchant   Trade with the traveling merchant

Travelling merchants' narration (periods 5 to 8) when traded with   You have arrived in a small county and found a farmer who is willing to let you sell the harvest on the foreign market. You can sell this harvest for 32ECU.

You successfully sold the harvest, and you can either split the profit and each one of you gets 16 ECU or you can take all the money and run.

If you take the money you will get 32ECU and the farmer will get 0ECU.

Split the profit   Take the money and run

Traveling merchants' narration (periods 5 to 8) when not traded with   You traveled this period but the farmer of this village decides to not trade with you. You will travel to another village to find another farmer to trade with.

OK

Local Merchant's narration (Period 5)   You are a merchant who sells goods in a local market. You have a long-standing relationship with a farmer who often gives you his harvest to sell at the market. When the farmer gives you the harvest, each of you gets 8ECU.

The Farmer has three options: 1) Keep the product, 2) give the product to you, 3) give the product to a traveling merchant.

If farmer decides to keep the product or give it to the traveling merchant, then you will get 4ECU. If he decides to deal with you, then you both get 8ECU.

OK

The WE treatment

Farmers' narration (periods 5) A travelling merchant has arrived in your county. Travelling merchants know different people and foreign markets. They travel all year long selling merchandise to the highest bidder. This merchant has offered to take your harvest and sell it in a foreign market.

After selling the harvest for 32 ECU, the travelling merchant could either share the profit with you or take all the money and run.

If the travelling merchant shares, you get 16ECU, but if the travelling merchant takes the money and runs, then you will take the merchant to court.

With a probability of 1/2 (one out of two times), the court finds the merchant guilty, gives you back 16ECU, and charges the merchant 5ECU in court fees, leaving the merchant with 11ECU.

With the probability of 1/2 (one out of two times), the court does not find the merchant guilty and charges you 5ECU in court fees. In this case, the travelling merchant keeps all the money.

However, if you give your products to the travelling merchant, you can't also trade with the local merchant. The local merchant will only get 4ECU since you are no longer their trade partner. All your previous options are still available to you. You can keep your harvest for yourself, trade the harvest with the local merchant, or let the travelling merchant take the products to the foreign market.

Keep your harvest   *Trade with local merchant*   *Trade with the traveling merchant*

Farmers' narration (periods 6 to 8)   You still can keep your harvest for yourself or to trade it to the local merchant.

If you keep the harvest for yourself then you will get 4ECU. If you trade with the local merchant you get 8ECU. A new travelling merchant has approached you offering the same potential as the previous travelling merchant. This merchant can sell your harvest for a profit of 32ECU in a foreign market.

If you decide to trade with the new travelling merchant and he/she splits the gains from trade, you get 16ECU but if he takes the money and runs, then a court will try your case.

With a probability of 1/2 (one out of two times), the court finds the merchant guilty, gives you back 16ECU, and charges the merchant 5ECU in court fees, leaving the merchant with 11ECU.

With the probability of 1/2 (one out of two times), the court does not find the merchant guilty and charges you 5ECU in court fees. In this case, the travelling merchant keeps all the money.

If you give your products to the travelling merchant, you will also impact the local merchant who will only get 4ECU since you are no longer their trade partner. You have three options.

Keep your harvest   Trade with local merchant   Trade with the traveling merchant

Local Merchant's narration (Period 5)   You are a merchant who sells goods in a local market. You have a long-standing relationship with a farmer who often gives you his harvest to sell at the market. When the farmer gives you the harvest, each of you gets 8ECU.

The Farmer has three options: 1) Keep the product, 2) give the product to you, 3) give the product to a traveling merchant.

If farmer decides to keep the product or give it to the traveling merchant, then you will get 4ECU. If he decides to deal with you, then you both get 8ECU.

<div align="center">OK</div>

Travelling merchants' narration (periods 5 to 8)   You have arrived in a small county and found a farmer who is willing to let you sell the harvest on the foreign market. You can sell this harvest for 32ECU.

You successfully sold the harvest, and you can either split the profit and each one of you gets 16 ECU or you can take all the money and run.

If you decide to take the money and run, a court will try the case. With a probability of 1/2 (one out of two times), the court finds you guilty. In this case, the court charges you 5ECU in court fees so you will get 11ECU and give the farmer 's share (16ECU) back.

With a probability of 1/2 (one out of two times), the court does not find you guilty, you keep all the money (32ECU), and the farmer pays 5ECU in court fees (the farmer's profit is -5ECU).

You have two options:

<div align="center">Split the profit   Take the money and run</div>

The NoLM treatment's common stage

Farmers' narration (period 1)   You are a farmer in a small county. You have to work hard around the clock to harvest your products.

You can do two things with your harvest.

First, you can sell your harvest in the local market. If you sell your harvest in the local market you make 8ECU.

Second, you can keep your harvest and consume everything yourself. In this case your payoff is equal to 4ECU.

You can either keep your harvest or sell it in the local market.

<div align="center">Keep your harvest   Sell in the local market</div>

Farmers' narration (periods 2 to 4)   You have two options.

your harvest for yourself, this pays you 4ECU, or selling your products in the local market which pays you 8ECU.

Keep your harvest   *Sell in the local market*

Traveling merchants' narration (period 1)   You are a travelling merchant accustomed to dealing with different people and markets. To make your living selling merchandise, you have to travel all year long.

Farmers work hard around the clock to collect their harvest. If you travel to a village and find a farmer who is willing to trade you his harvest, you both can possibly gain from trade. But if you do not find a farmer or if the farmer is unwilling to trade with you, then you will have no opportunity to trade. Your payoff will be 4ECU.

OK

Traveling merchants' narration (periods 2 to 4)   You traveled this period but you were unsuccessful in finding a farmer to trade with.

OK

The NoLM treatment

Farmers' narration (period 4)   A travelling merchant has arrived in your county. Travelling merchants know different people and foreign markets. They travel all year long selling merchandise to the highest bidder.

This merchant has offered to take your harvest and sell it in a foreign market.

After selling the harvest for 32ECU, the travelling merchant could either share the profit with you or take all the money and run.

If the travelling merchant shares, you both get 16ECU. But if the travelling merchant takes the money and runs, then you will get 0ECU (the travelling merchant gets 32ECU).

All your previous options are still available to you.

You can keep your harvest for yourself (which pays you 4ECU), sell the harvest in the local market (which pays you 8ECU) or let the travelling merchant take the products to the foreign market.

Keep your harvest   *Sell in the local market*   *Trade with the traveling merchant*

Farmers' narration (periods 5 to 8)   You still can keep your harvest for yourself or to sell in the local market.

If you keep the harvest for yourself then you will get 4ECU.If you sell your harvest in the local market you get 8ECU.

A new travelling merchant has approached you offering the same potential as the previous travelling merchant. This merchant can sell your harvest for a profit of 32ECU in a foreign market.

If you decide to trade with the new travelling merchant and he/she shares the profits, you both get16ECU. But if he/she takes the money and runs you get 0ECU (i.e. travelling merchant gets 32ECU).

You have three options.

Keep your harvest   *Sell in the local market*   *Trade with the traveling merchant*

Traveling merchants' narration (periods 5 to 8) if engaged in long-distance trade   You have arrived in a small county and found a farmer who is willing to let you sell the harvest on the foreign market. You can sell this harvest for 32ECU.

You successfully sold the harvest, and you can either split the profit and each one of you gets 16ECU or you can take all the money and run.

If you take the money you will get 32ECU and the farmer will get 0ECU.

Split the profit   *Take the money and run*

Traveling merchants' narration (periods 5 to 8) if not engaged in long-distance trade You traveled this period but the farmer of this village decides to not trade with you.

You will travel to another village to find another farmer to trade with.

OK

A.1.2   The Triad Task

The beginning   At this stage of the experiment you will be asked a number of questions. There is no right or wrong answer. Please answer them as best you can.

In the following lists, among the three things listed together, please indicate which two of the three are most closely related.

1.	Seagull	Sky	Dog
2.	Black	White	Blue
3.	Doctor	Teacher	Homework
4.	Apple	Orange	Pear
5.	Shoes	Boots	Slippers
6.	Train	Bus	Tracks
7.	Computer monitor	Antenna	Television
8.	Hospital	Bank	Cinema
9.	Carrot	Eggplant	Rabbit
10.	Cloud	Wind	Rain
11.	Panda	Banana	Monkey
12.	Shirt	Hat	Pants
13.	Kite	Basketball	Tennis
14.	Farmer	Corn	Bread
15.	Shampoo	Hair	Beard
16.	Bridge	Tunnel	Highway
17.	Piano	Violin	Guitar
18.	Child	Man	Woman
19.	Postman	Policeman	Uniform
20.	Letter	Stamp	Postcard

(In the experiment, subjects saw the questions one by one. The questions used to compute the I/C score are 1,3,6,7,9,11,14,15. For example, in (1) a collectivist would choose {seagull, sky}, focusing on a holistic relationship between a bird and the sky, while an individualist would choose {seagull, dog}, focusing on the category "animal".)

The end   Now you will go to the next phase. In this phase of the experiment you will be assigned a certain role in a narrative. Then you will make decisions that affect the narrative you observe as well as the narrative observed by others. Together all players' decisions will determine their payoffs. Please read the text carefully. Be aware that outcomes may depend on other player's action as well. The narratives are simple, and if you follow them carefully, you may earn a considerable amount of money which will be paid to you in cash at the end of the experiment.

This phase will last for several periods, and you will be paid the sum of your earnings from all periods.

Every 12 experimental currency unit (henceforth ECU) will be converted to 1 CAD.

A.1.3 Risk preference elicitation instructions

In the questions that follow, you are going to be asked to make ten decisions. Each decision will be between Option A and Option B. One of the ten choices you make will be randomly selected to determine your earnings for this part of the experiment.

Options		
A	B	Your Choice
$1 or $3 each with probability 1/2	$0.1 with probability 9/10 or $4 with probability 1/10	A or B
$1 or $3 each with probability 1/2	$0.1 with probability 8/10 or $4 with probability 2/10	A or B
$1 or $3 each with probability 1/2	$0.1 with probability 7/10 or $4 with probability 3/10	A or B
$1 or $3 each with probability 1/2	$0.1 with probability 6/10 or $4 with probability 4/10	A or B
$1 or $3 each with probability 1/2	$0.1 with probability 5/10 or $4 with probability 5/10	A or B
$1 or $3 each with probability 1/2	$0.1 with probability 4/10 or $4 with probability 6/10	A or B
$1 or $3 each with probability 1/2	$0.1 with probability 3/10 or $4 with probability 7/10	A or B
$1 or $3 each with probability 1/2	$0.1 with probability 2/10 or $4 with probability 8/10	A or B
$1 or $3 each with probability 1/2	$0.1 with probability 1/10 or $4 with probability 9/10	A or B
$1 or $3 each with probability 1/2	$0.1 with probability 0/10 or $4 with probability 10/10	A or B

A.2   Measuring individualism and collectivism

Following the seminal study of individualism and collectivism by [38], various scholars have tried to provide different methods to measure these cultural traits. These methods, in general, could be divided into two categories; questionnaires and cognitive tests. Triandis and his colleagues utilized the questionnaire method in various research [42, 76, 77]. In this approach, people are to answer how they would act, behave, or think in a series of different situations.[1] Since the role assignment protocol in this experiment was based on the individualism/collectivism score, we had to measured it prior to the treatments. Priming subjects would have been a real concern if we had to ask them to think about their relationship with their family and friends immediately before they play the game. Hence, we eschewed the questionnaire method.

[61] argued that cognitive orientations are influenced by "the considerable social differences that exist among different cultures". That is, people of the East Asian origin to have a holistic view of the world,"attending to the entire field and assigning causality to it" while people of the Western European origin to have an analytic view, "paying attention primarily to the object and the categories to which it belongs and using rules"(p.291). For example, to capture such cognitive differences, [49, 50] employed a framed line task. In the first stage of this task, subjects see a square with a line inside it. In the next stage, they see an empty square which might be larger, smaller, or the same size as the original square. They repeat this task for a limited number of times with one of the following instructions, draw a line which is the same length as the original line (that is, absolute task) or draw a line that has the same relative proportions as the original line (that is, relative task). Authors argue that the analytic minded subjects should perform better in the absolute task since this "task requires attention to be focused on the target line" while holistic minded subjects should perform better in the relative task since it "requires attention to be allocated broadly to both the target line and the surrounding square"[50, p.242]. Results of this task showed that American subjects are more analytic minded compared to Japanese subjects.

The implicit focus of the questionnaire method on the externality imposed on family, friends, and in-group members along with the time consuming nature of the framed line test propelled us to employ the Triad Task. The advantages of this task are threefold. First, according to [72], it captures the difference in the cognitive orientations successfully. Second, the abstract nature of this task eliminates the priming effect. Third, it can be conducted in a short amount of time with a high accuracy.

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[1]For example, "You are about to make an important decision (e.g. marriage, carrier choice). How often you are likely to spend time considering the implications of the decision (e.g. economic, emotional) on your relatives? 1=all the time; 5=never ".

A.3 Additional Analysis

A.3.1 Risk Preferences

Figure A.1 shows the relative frequency of the safe choice for each pair of lotteries. As is often the case in multiple price list elicitations, our subjects are risk averse on average. As is also common, we observe a small set of subjects whose preferences are inconsistent with EU.
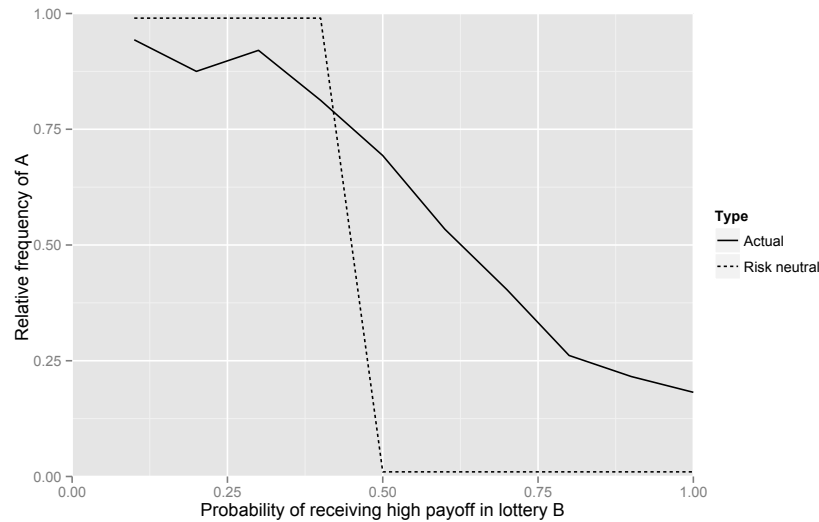

Figure A.1: **The distribution of choices in the risk preference elicitation.** The solid line plots the data, and the dashed line plots the risk-neutral, expected utility maximizing choices.

A.3.2 Traveling Merchants' Behavior

In the subgame perfect Nash equilibrium of all four treatments, a payoff maximizing traveling merchant cheats the farmer with probability 1; however, we observe substantial reciprocation in all treatments: the merchant cheats in only 14/33 (42%) instances in the NE treatment, 19/32 (59%) instances in the WE treatment, 16/42 (38%) instances in the SE treatment, and 14/35 (40%) in the NoLM treatment. This is consistent with two decades of the experimental evidence revealing positive reciprocity in trust games [e.g. 44].

Although our interpretation of the individualism/collectivism distinction does not have direct implications for traveling merchants' behavior, we look for any behavioral pattern that emerges in the experiment. Note that, due to the role assignment rule, which assigned the most and least collectivistic subjects to the role of the Farmer, the distribution of traveling merchants' I/C scores is compressed and away from the extremes. In fact, in the NE treatment there is no traveling merchant with individualistic tendencies (that is, I/C scores ≤ 0.5 for all traveling merchants). Figure A.2 displays histograms of the I/C distribution for traveling merchants in each treatment.

Nevertheless, for completeness, we report regression analysis of the determinants of the decision to cheat. We restrict attention to the observations in which the farmer chose long-distance trade. The dependent variable takes a value of 1 when the merchant cheated the farmer and 0 otherwise. In our first specification, the independent variables include a constant term, the merchant's I/C score, and treatment dummies. In a second specification, we include interactions between the treatments

	(1) Cheat$_t$	(2) Cheat$_t$
I/C Score	0.096	1.873**
	(0.315)	(0.832)
Weak Enforcement	0.256***	0.972***
	(0.092)	(0.215)
Strong Enforcement	0.033	0.588**
	(0.075)	(0.252)
No Local Merchant	0.074	0.652**
	(0.140)	(0.256)
WE × I/C		-2.263***
		(0.870)
SE × I/C		-1.851*
		(0.967)
NoLM × I/C		-1.940**
		(0.868)
Intercept	0.328***	-0.206
	(0.114)	(0.203)
Observations	142	142
R^2	0.02	0.08

Clustered standard errors in parentheses.
* $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Table A.1: **Regression Analysis of Cheating by Traveling Merchants**

and I/C score. We include random effects for each subject to control for repeated observations, and we cluster standard errors at the session level. Table A.1 reports GLS regression results. In column (1), we observe no effect of I/C score on cheating, though there is more cheating overall in the WE treatment. Perhaps this is driven by the weakening of the cooperative signal sent by the farmer's trade decision. In column (2), we observe a positive and significant coefficient on the I/C score among those in the NE treatment. However, due to the compressed distribution, this reflects differences only within subjects who were somewhat collectivistic. In the other treatments, where we observe traveling merchants with individualistic tendencies, this effect is offset. Wald tests cannot reject the null hypothesis that the sum of the coefficient on the I/C score and the I/C treatment interaction is equal to 0 for any treatment (p-values = 0.12, 0.96 and 0.79 for the WE, SE and NoLM treatments, respectively).

In previous experiments, to alleviate the problem of cheating, different formal enforcement mechanisms have been incorporated into the trust game. In general, these formal enforcement mechanisms are either imposed by the second party (that is, player 1/the "farmer" in the trust game) or by a third party (that is, a contract enforcement/court system)[2]. Considering second party enforcement, one possibility is to add a retaliation opportunity for player 1 after being cheated [71] or to let player 1 credibly threaten player 2 with a fine *ex ante* which will be imposed in case of cheating [24, 23]. Interestingly, both of these two methods led to increased cheating by player 2. [6] add a court with different enforcement power to the trust game. They find that cheating occurs less often in the weak and strong court system treatment compare to the medium enforcement power. This is

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[2]Third party enforcement is mainly imposed through a court that probabilistically punishes non-sharing behavior. [22], however, used *human* third party enforcement in both a dictator and prisoner's dilemma game. They find that *human* third party enforcement punishes selfish behavior roughly 60% of time at a cost to herself and therefore encourages sharing/cooperation.
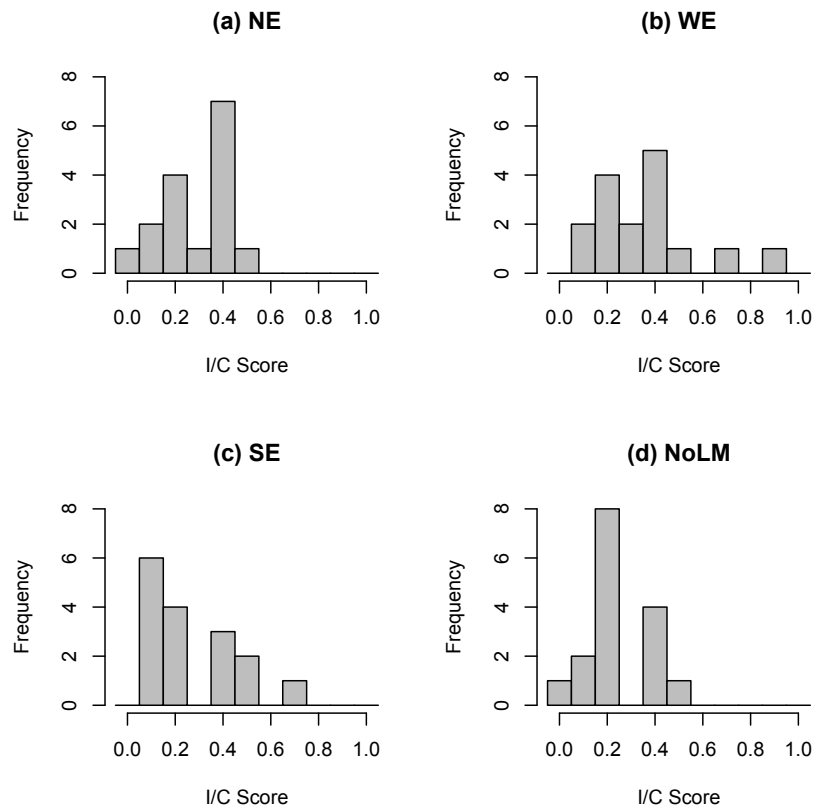
Figure A.2: **Histograms of traveling merchants' I/C scores, by treatment.** Each panel displays the data for one treatment. Note that the distribution is compressed away from the extremes; in particular the sample contains very few individualists.

consistent with our findings which show that cheating occurred significantly more often in the WE treatment than the NE, SE, and NoLM treatments.

Appendix B

Individualism, Collectivism and Alternative Enforcement Mechanisms in Exchange

B.1 Experiment Instructions

This section presents what subjects see on their screens during the experiment. Information would be given to the subjects in the sequential manner based on their decisions. Subjects will assume their roles (i.e. farmer or traveling merchant) in the beginning of the experiment according to the triad task results. The only difference between treatments is the court enforcement power. Therefore, here I only give the narration of the IFE treatment.

B.1.1 The Narrations

The Perfect Stranger Matching

Farmers' narration (period 1)   You are a farmer in a small county. You have to work hard around the clock to harvest your products. You can do two things with your harvest. First, you can sell your harvest in the local market. Or you can give your products to a traveling merchant to sell them for you in a foreign market.

Travelling merchants know different people and foreign markets. They travel all year long selling merchandise to the highest bidder.

You know that your harvest is worth more in the foreign market than the local market. When you trade with a travelling merchant, after selling your harvest, he/she could either share the profit with you or take all the money and run.

There are two ways to trade with a traveling merchant. First you can seek advice of the village elder (played by the computer). The elder has information about the past dealings of all the traveling merchants. The elder gives you information about the traveling merchant for a fee. The elder will tell you whether or not the traveling merchant has ever cheated a farmer in the past. After seeing whether this traveling merchant has cheated or not, you can decide to trade with him/her or to sell your product in the local market.

The second way to deal with the traveling merchant is to register your exchange with a court for a fee. If the travelling merchant splits the profit with you, the court does nothing, but if the travelling merchant takes the money and runs, then you will take your case to court. The court may catch the traveling merchant and return your money or the traveling merchant may keep the money without punishment.

There is no merchant for you to trade with in this period. However, at this time, the village elder is collecting information about the past dealings of the traveling merchant. In the meanwhile, you sell your harvest in the local market for 15ECU.

OK

Traveling merchants' narration (Period 1)   You are a travelling merchant accustomed to dealing with different people and markets. To make your living selling merchandise, you have to travel all year long.

Farmers work hard around the clock to collect their harvest. If you travel to a village and find a farmer who is willing to trade you his harvest, you both can possibly gain from trade. But if you do not find a farmer or if the farmer is unwilling to trade with you, then you have other goods to sell and you get 8ECU (farmer gets 8ECU).

If a farmer decides to trade with you, you always have the option of splitting the profit or taking the money and run.

There are two ways that farmers trade with you.

First, the farmer asks the elder of the village about your past trades for a fee of 5ECU (the farmer pays this money). If you never took the money and ran in any previous exchange, then the elder will tell the farmer that you are "trustworthy". If you have taken the money and run once or more, then the elder says that you are "untrustworthy".

The second way is that the farmer registers the exchange with you in a court for a fee of 5ECU (the farmer pays this money). If you split the profit, court does nothing, but if you take the money and run, then the farmer will take the case to court. Court may catch and punish you and return the farmer's money or you may escape.

You have arrived in a small village.

From a previous trade with a (computerized) farmer you made 20ECU. You can either split the profit and get 10ECU or you can take all the money and run.

If you take the money you will get 20ECU and that farmer will get 0ECU.

Know that the elder observes what you do and may share what you did with others (for a fee) and this information might affect your future trades with other farmers.

Split the profit   *Take the money and run*

Farmers' narration (periods 2 to 5)   You can sell your product in the local market for 8ECU. In this case, the traveling merchant sells the goods that he/she already has and gets 8ECU.

83

You know that your harvest is worth 48ECU in the foreign market. The travelling merchant, however, after selling your harvest, could either share the profit with you or take all the money and run.

A new travelling merchant has approached you and offered to take your product to a foreign market. This merchant can sell your harvest for a profit of 48ECU in a foreign market. There are two ways to trade with a traveling merchant. First you can seek advice of the village elder (i.e. played by the computer). The elder has information about the past dealings of all the traveling merchants. The elder gives you information about one traveling merchant for a fee of 5ECU. The elder gives you the following information:

- The elder says a traveling merchant is trustworthy if he/she never took the money and ran in previous trades with others.

- The elder says a traveling merchant is untrustworthy if he/she took the money and ran once or more in previous trades with others.

After getting the information you can decide either to sell your product in the local market which pays 3ECU (8ECU- elder's fee) or to deal with the traveling merchant.

If the travelling merchant splits the profit, you get 19ECU, but if the travelling merchant takes the money and runs, then you will get -5ECU (elder's fee).

The second way to trade with the traveling merchant is to register your exchange in a court for a fee of 5ECU.

If the travelling merchant splits the profit, you get 19ECU (24 - court fee), but if the travelling merchant takes the money and runs, then you will take your case to the court.

With a probability of 1/2 (one out of two times), the court finds the merchant guilty, gives you back 19ECU, and charges the merchant 6ECU in court fees, leaving the merchant with 18ECU.

Sell your product in the local market Ask the elder Register in the court and then trade with the merchant

Farmers' narration (periods 2 to 5) after asking the elder   Now, you have asked the elder. The elder says that this traveling merchant is ...

You can decide either to sell your product in the local market which pays 3ECU (8ECU- elder's fee) or to deal with the traveling merchant.

If the travelling merchant splits the profit, you get 19ECU (the traveling merchants gets 24ECU), but if the travelling merchant takes the money and runs, then you will get -5ECU (elder's fee).

Sell your market in the local market   Trade with the traveling merchant

Travelling merchants' narration (periods 2 to 5) when traded with using informal enforcement/the elder   You have arrived in a small county and found a farmer who, after talking to the elder, is willing to let you sell the harvest on the foreign market. You can sell this harvest for 48ECU.

You successfully sold the harvest, and you can either split the profit and get 24 ECU (the farmer will get 19ECU (24 - elder's fee)) or you can take all the money and run.

If you take the money you will get 48ECU and the farmer will get -5ECU (the farmer has paid the elder's fee).

You have two options:

Split the profit   *Take the money and run*

Traveling merchants' narration (periods 2 to 5) when traded with using formal enforcement/the court   You have arrived in a small county and found a farmer who, after registering your deal exchange in court, is willing to let you sell the harvest on the foreign market. You can sell this harvest for 48ECU.

You successfully sold the harvest, and you can either split the profit and get 24ECU (the farmer gets 19 (24 court's fee)) or you can take all the money and run.

If you decide to take the money and run, a court will try the case.

With a probability of 1/2 (one out of two times), the court finds you guilty. In this case, the court charges you 6ECU in court fees so you will get 18ECU and give the farmer 's share (19ECU) back.

With a probability of 1/2 (one out of two times), the court does not find you guilty, you keep all the money (48ECU), and the farmer pays 5ECU in court fees (the farmer gets -5ECU).

You have two options:

Split the profit   *Take the money and run*

Traveling merchants' narration (periods 2 to 5) when not traded with   You have traveled this period but the farmer of this village decides to not trade with you. You will travel to another village to find another farmer to trade with.

OK

Traveling merchants' narration (periods 2 to 5) when not traded with after consulting the elder   You have traveled this period but the farmer of this village, after consulting the elder, decides to not trade with you. You will travel to another village to find another farmer to trade with.

OK

Instruction before the random matching stage

Please read the text carefully. Now, you will move onto the next stage. In this stage you will never trade with traveling merchants and farmers that you have been trading so far. There will be new farmers and traveling merchants. Nobody has the history of what you did so far.

This phase will last for several periods. One round will be randomly picked, and you will be paid according to your earning in that specific period.

Every 15 experimental currency unit (henceforth ECU) will be converted to 1 CAD.

Random Matching Stage

Narration is similar to perfect stranger matching stage, only the word "new" is removed from the phrase "new traveling merchant".

Instruction before risk elicitation task

Next is the final stage of the experiment. The outcome of this phase only depends on your individual decision. The payoff is in Canadian dollar. Please read the instruction carefully.

B.2 Additional Analysis

B.2.1 Risk Preferences

Figure B.1 demonstrates the relative frequency of the safe choice for each pair of lotteries. On average, subjects are risk averse which mostly corresponds to the expected utility theorem.
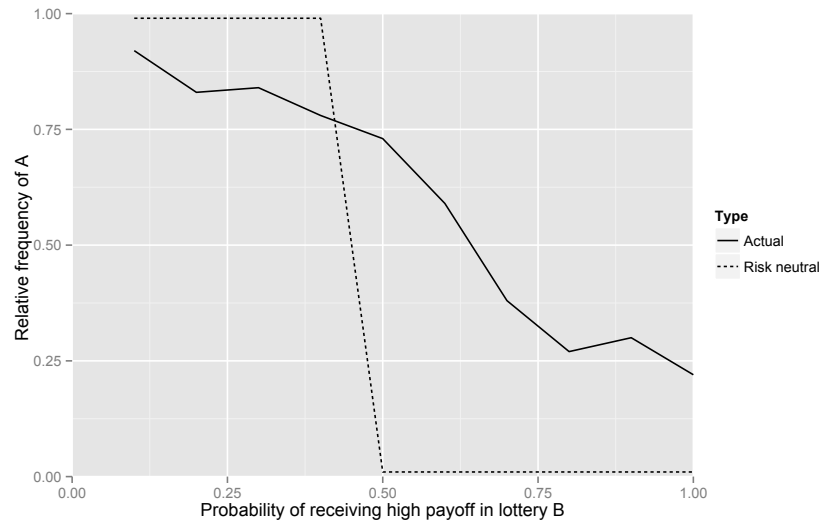

Figure B.1: **The distribution of choices in the risk preference elicitation.** The solid line plots the data, and the dashed line plots the risk-neutral, expected money maximizing choices.

B.2.2 Multinomial logistic regressions

To test for the sensitivity of my findings with respect to the estimation method, I, also, run multinomial logistic regressions. In these regressions, I define a farmer's decision dummy which takes value of 0 when farmers opt out of long distance trade (that is, Local trade in figure 3.1), 1 when farmers register in the court (that is, Long-distance Trade via Court in figure 3.1), and 2 when farmers consult the elder (that is, Elder in figure 3.1). Since I am interested in the enforcement mechanism selection, I set no trade as the base outcome. I, further, control for the I/C score, the treatment, the risk aversion, the interactions between them, and the gender. In both regressions, standard errors are clustered at the group level. Column 1 of the table B.1 reports the result of the multinomial regression for the PSM phase while column 2 of the same table correspond to the result of the experience phase.

In the PSM phase, consulting the elder has a significant negative correlation with the I/C score in the EFE treatment suggesting that collectivists, similar to *finding 1*, employ the reputation system more often than individualists when the court system is efficient. As the switch to the experience phase occurs, in the EFE treatment, individualists significantly register their long-distance trade in the court more than their collectivist counterparts. In the experience phase of IFE treatment, this effect disappears. All in all, results of the multinomial logistic regression method are aligned with the Heckman probit model.

	(1) Farmers' decision PSM	(2) Farmers' decision Experience
No trade/Base outcome		
The court		
I/C Score	0.035	2.689***
	(0.939)	(0.761)
IFE	-0.514	-3.622*
	(1.292)	(2.039)
IFE × I/C Score	-1.666	-3.251***
	(1.503)	(1.104)
Risk	-0.309***	-0.073
	(0.087)	(0.361)
IFE × Risk	0.284*	0.770
	(0.153)	(0.490)
Female	-0.908	-0.096
	(0.738)	(0.642)
Intercept	3.644***	2.333
	(0.795)	(1.820)
The elder		
I/C Score	-2.694**	1.591
	(1.327)	(1.268)
IFE	1.454	-2.957**
	(1.824)	(1.337)
IFE × I/C Score	0.864	-2.212
	(1.685)	(1.774)
Risk	-0.029	-0.116
	(0.295)	(0.309)
IFE × Risk	-0.119	1.012***
	(0.365)	(0.365)
Female	-0.070	0.226
	(1.101)	(0.788)
Intercept	1.369	-0.119
	(1.332)	(1.161)
Observations	128	320

Table B.1: **Regression analysis of farmers' decision**

B.2.3 Traveling Merchants

It is important to note that the individualism/collectivism approach does not offer an interpretation of traveling merchants' behavior. Due to the role assignment protocol, there is no highly collectivist or individualist traveling merchant (i.e. the distribution of traveling merchants' I/C scores is away from the tails). Traveling merchants' I/C scores are especially skewed toward collectivism. Figure B.2 portrays these distributions per treatment.

In the PSM phase, I observe 15/50 (30%) cases of cheating in the EFE treatment and 21/51(41%) cases of cheating in the IFE treatment. The amount of cheating in the experience phase follows a

similar pattern, I observe 51/146 (35%) cases of cheating in the EFE treatment and 41/107 (38%) cases of cheating in the IFE treatment.
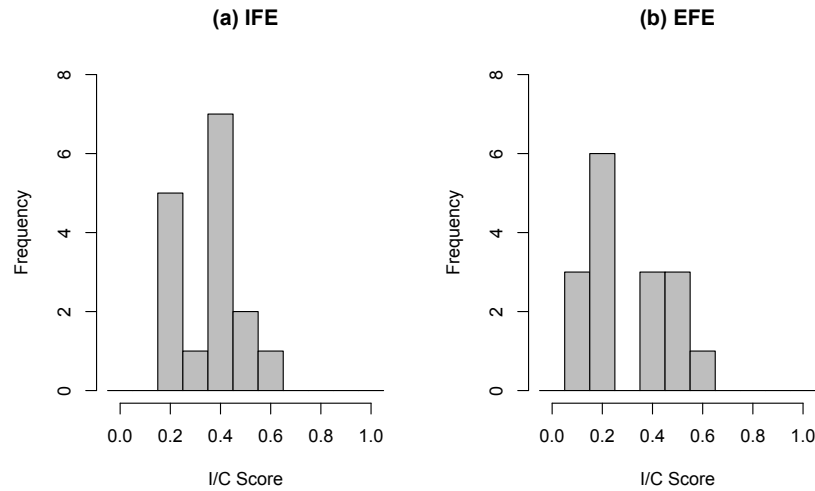
(a) IFE　　　　　　　　　　**(b) EFE**

Figure B.2: **Histograms of the distribution of traveling merchants' I/C scores per treatment.**

To probe into the choice of cheating by traveling merchants, I, first, limit the sample to the cases that long-distance trade had happened and therefore traveling merchants had the choice between sharing and cheating. I use a panel regression model in which the dummy variable takes the value of 1 if traveling merchants cheat and 0 otherwise. I control for the repeated observations for the same individuals by including random effects. I also cluster the standard errors at the group level. Table B.2 reports the results.

	(1) Cheat PSM	(2) Cheat PSM	(3) Cheat Experience	(4) Cheat Experience
I/C Score	0.369	0.367	0.363	0.373
	(0.385)	(0.400)	(0.289)	(0.314)
IFE	0.459**	0.453*	0.331	0.345*
	(0.232)	(0.245)	(0.217)	(0.205)
IFE $\times$ I/C Score	-1.040	-1.018	-0.854*	-0.916*
	(0.657)	(0.670)	(0.483)	(0.513)
Female	-0.219**	-0.220**	-0.070	-0.070
	(0.109)	(0.111)	(0.138)	(0.140)
Risk		0.002		-0.005
		(0.025)		(0.032)
Intercept	0.284*	0.279*	0.264**	0.284***
	(0.171)	(0.157)	(0.111)	(0.109)
Observations	101	101	253	253

Clustered standard errors in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Table B.2: **Regression analysis of cheating**

In the PSM phase, female subjects cheat significantly less often than male subjects. This difference, however, disappears in the experience phase. Similar to the previous studies [24, 23] a weak pun-

ishment mechanism (that is, an inefficient court system in this experiment) induces more cheating. That is perhaps due to that fact that the trust signal sent by the farmers is crowded out by the weak enforcement.

Neither the I/C score nor the summation of I/C score and IFE $\times$ I/C score were significant in any of the specifications. This indicates that there is no significant correlation between the cultural disposition and the behavior of traveling merchants in the context of this experiment.

Appendix C

Testamentary Power and Welfare: Islamic Inheritance Law versus Primogeniture

C.1   Existence of a solution to the FOCs

Rearranging equation 4.4, I have:

$$w = (1 - \tau)\beta k^{\alpha} l^{\beta-1} z^{1-\alpha-\beta} \tag{C.1}$$

$$w = (1 - \tau)\beta (\frac{K}{L})^{\alpha} L^{\alpha+\beta-1} \tag{C.2}$$

Substituting from equation 4.12 and moving L to the left hand side, I have:

$$L = \left((1 - \tau)\frac{\beta}{w}(\frac{\alpha}{\beta\gamma})^{\alpha} \right)^{\frac{1}{1-\alpha-\beta}} \tag{C.3}$$

Rearranging equation 4.7, I have $E + 1 = \frac{1}{\tau}$. Substituting from equation 4.11, I have:

$$\tau = \left(\frac{k^{\alpha} l^{\beta} z^{1-\alpha-\beta}}{c} \right)^{-\frac{1}{2}} \tag{C.4}$$

$$\tau = \left(\frac{(\frac{K}{L})^{\alpha} L^{\alpha+\beta}}{Nc} \right)^{-\frac{1}{2}} \tag{C.5}$$

Moving L to the left hand side I have:

$$L = \tau^{-\frac{2}{\alpha+\beta}} (Nc)^{\frac{1}{\alpha+\beta}} \left(\frac{\alpha}{\beta\gamma} \right)^{-\frac{\alpha}{\alpha+\beta}} \tag{C.6}$$

91

Setting equations C.3 and C.6 equal to each other, I have:

$$\tau = (1-\tau)^{-\frac{\alpha+\beta}{2(1-\alpha-\beta)}} \left(\frac{\beta}{w}\right)^{-\frac{\alpha+\beta}{2(1-\alpha-\beta)}} (Nc)^{\frac{1}{2}} \left(\frac{\alpha}{\beta\gamma}\right)^{-\frac{\alpha}{2(1-\alpha-\beta)}} \tag{C.7}$$

I use the following reduced forms; $\rho = \left(\frac{\beta}{w}\right)^{-\frac{\alpha+\beta}{2(1-\alpha-\beta)}} (Nc)^{\frac{1}{2}} \left(\frac{\alpha}{\beta\gamma}\right)^{-\frac{\alpha}{2(1-\alpha-\beta)}}$ and $\mu = \frac{\alpha+\beta}{2(1-\alpha-\beta)}$. These, in turn, change equation C.7 to the following;

$$\tau = (1-\tau)^{-\mu}\rho \tag{C.8}$$

For equation C.8 to have a solution, the following maximization should have a solution:

$$\max_{\tau} \ \tau - (1-\tau)^{-\mu}\rho \tag{C.9}$$

FOC and SOC are as follows:

$$FOC: \qquad\qquad 1 - (-\mu)(-1)(1-\tau)^{-\mu-1}\rho = 0 \tag{C.10}$$

$$SOC: \qquad\qquad (-\mu)(-\mu-1)(-1)(1-\tau)^{-\mu-2}\rho < 0 \tag{C.11}$$

Notice that the second derivative is always negative. Therefore, the solution to the FOC is always a maximum. The solution to the FOC is as follows:

$$\tau^* = 1 - \left(\frac{1}{\mu\rho}\right)^{\frac{1}{-\mu-1}} \tag{C.12}$$

I plug back the optimal tax rate in the maximization problem to ensure that $\tau^* > 0$.

$$1 - \left(\frac{1}{\mu\rho}\right)^{\frac{1}{-\mu-1}} - \rho\left(\frac{1}{\mu\rho}\right)^{\frac{-\mu}{-\mu-1}} > 0 \tag{C.13}$$

With further manipulation of the above equation, I have:

$$\left(\frac{1}{\mu\rho}\right)^{\frac{1}{-\mu-1}}\left[1+\frac{1}{\mu}\right] < 1 \tag{C.14}$$

For inequality C.14 to hold, I should have:

$$(\mu\rho)^{\frac{1}{\mu+1}}\left[1+\frac{1}{\mu}\right] < 1 \tag{C.15}$$

ρ is a direct function of the number of nobles N and marginal cost of effort c. Therefore, the above condition could potentially be translated as having a small number of nobles in the economy, small effort cost, or both.

The above maximization has two solutions. To discuss the economically relevant solution, I employ figure C.1. Let us assume that initially the number of nobles in the economy is equal to N_1. In such a case, there are two intersections with the 45° line namely τ_1 and τ_4. Furthermore, assume that the

number of nobles has increases to N_2 (that is, $N_2 > N_1$). The graphical interpretation of this change is an upward shift of the curve. New equilibria are τ_2 and τ_3.
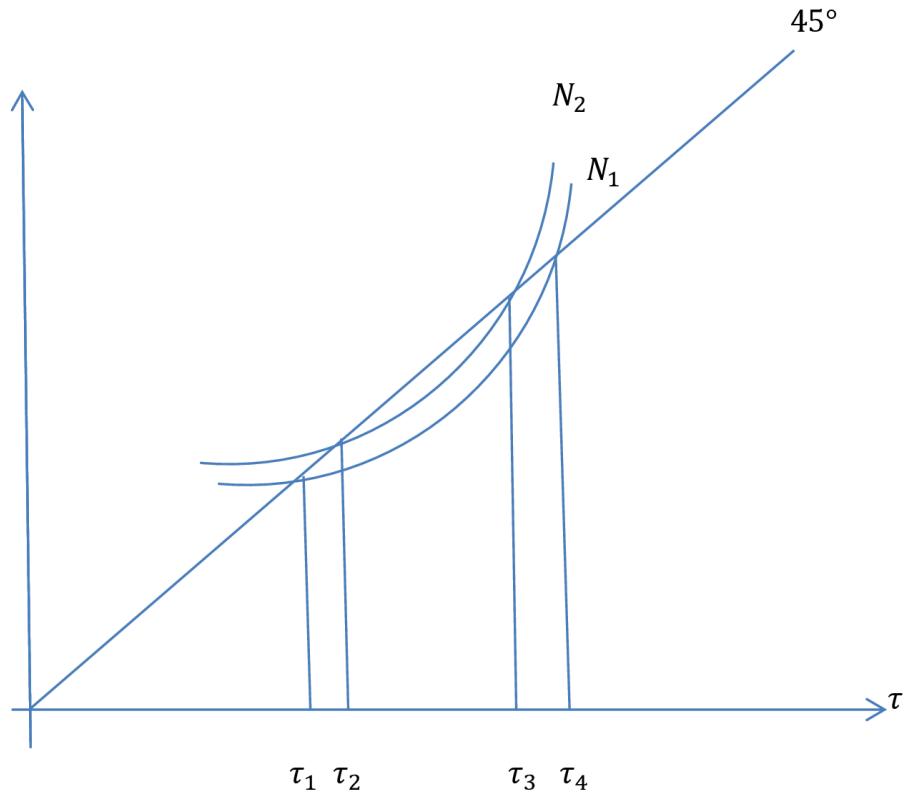

Figure C.1: **Graphical interpretation of the equation C.8.**

From section 4.1.4 we know that as the number of nobles increases, the total effort of nobles decreases and therefore the equilibrium tax rate increases. Considering that $\tau_4 > \tau_3$ and $\tau_2 > \tau_1$, economically admissible solutions are τ_1 and τ_2.