Appendix 1

Instructions

Welcome to the experiment. During the following experiment, we require your complete attention, and ask that you follow the instructions carefully. Please turn off your cell phones. Please raise your hands if you have any questions. The experimenter will come to you privately and answer your questions. No identifying information will be recorded in this experiment. Therefore, your choices in the experiment will be completely anonymous. In this experiment you are going to participate in two different treatments. I'm going to read the instructions for the first treatment now. After the end of this treatment, I'll read the instructions for the second treatment.

First Treatment

You will be assigned to groups of three. The group is going to remain the same until the end of this treatment. Each group is going to have a voter, a candidate for governor, and a candidate for president. These roles are going to remain fixed until the end of the treatment. Also, there are infinite artificial candidates for governor and president played by the computer. The treatment has a random number of rounds. That means that you can play one or many interactions in this same treatment. At each round, there is a 85% chance that the treatment continues to a next round.

The participants assigned as a candidate for governor or president will know whether they are the current governor or president at that round. However, the participant assigned as the voter won't know whether the

current governor or president is another participant or the computer. There are two types of artificial candidates, *corrupt* or *virtuous*. The candidate played by a participant is called *normal*. Which type is in office is also unknown by the voter. At the beginning of the treatment, one candidate is randomly picked between the *normal* candidate and the *virtuous* candidate. The *normal* candidate is picked with a probability of 0.9, and a *virtuous* candidate is picked with a probability of 0.1.

Once in office, the governor and the president have to decide individually on acting honestly or corruptly. The participant assigned as a candidate can choose between being honest or corrupt. The *corrupt* artificial players are always corrupt and the *virtuous* artificial players are always honest. After the governor and the president have made their respective decisions, the voter chooses whether to reelect or replace them. The voter can replace both, reelect both, replace the president and reelect the governor, reelect the president and replace the governor, or promote the governor to presidency. If the governor or the president is reelected, then he or she makes another decision. If the governor is promoted to presidency, then he or she will be the president in the next round. If the governor or president is replaced, then another candidate is randomly picked. If the participant assigned as a candidate is replaced after being in office, then he or she will stay out of the treatment for the remaining rounds. In this case, a *virtuous* candidate will be picked with a probability of 0.1 and a *corrupt* candidate will be picked with a probability of 0.9. Otherwise, a *virtuous* candidate will be picked with a probability of 0.1 and the *normal* candidate will be picked with a probability of 0.9.

The president (governor) who chooses to be honest in a certain round obtains 0.7 (0.3) points in that round. The president (governor) who chooses to be corrupt in a certain round obtains 1.4 (0.6) points in that round. If the president (governor) is honest in a certain round, then the voter obtains 0.7 (0.3) points in that round from the national (state) level. If the president (governor) corrupts in a certain round, then the voter obtains 0 points in that round from the respective level. The voter has to pay 0.7 (0.3) points to replace a president (governor). Every player has an initial endowment of 5 points. If the voter's points ever reach 0, then the treatment ends.

At the end of the experiment, the sum of points the participant obtained in both treatments is going to be converted to dollars at a proportion of 0.35. In other words, every point yields 35 cents of a dollar.

Summary of the game:

- One candidate is selected to be the president and one candidate is selected to be the governor;
- The president makes a choice and the governor makes a choice;
- The voter observes the choices made by the president and the governor and decides whether to reelect or replace the president and the governor, or whether to promote the governor to presidency;
- The game continues to a next round with a chance of 85%.

Second Treatment

You will be assigned to groups of two. The group is going to remain the same until the end of this treatment. Each group is going to have a voter and

a candidate for president. These roles will remain fixed until the end of the treatment. Also, there are infinite artificial candidates for president played by the computer. The treatment has a random number of rounds. That means that you can play one or many interactions in this same treatment. At each round, there is a 85% chance that the treatment continues to a next round.

The participant assigned as a candidate for president will know whether he or she is the current president at that round. However, the participant assigned as the voter won't know whether the current president is another participant or the computer. There are two types of artificial candidates, *corrupt* or *virtuous*. The candidate played by a participant is called *normal*. Which type is in office is also unknown by the voter. At the beginning of the treatment, one candidate is randomly picked between the *normal* candidate and the *virtuous* candidate. The *normal* candidate is picked with a probability of 0.9, and a *virtuous* candidate is picked with a probability of 0.1.

Once in office, the president has to decide on acting honestly or corruptly. The participant assigned as a candidate for president can choose between being honest or corrupt. The *corrupt* artificial players are always corrupt and the *virtuous* artificial players are always honest. After the president has made a decision, the voter chooses whether to reelect or replace the president. If the president is reelected, then he or she makes another decision. If the president is replaced, then another candidate is randomly picked. If the participant assigned as a candidate for president is replaced after being in office, then he or she is going to stay out of the treatment for

the remaining rounds. In this case, a *virtuous* candidate will be picked with a probability of 0.1 and a *corrupt* candidate will be picked with a probability of 0.9. Otherwise, a *virtuous* candidate will be picked with a probability of 0.1 and the *normal* candidate will be picked with a probability of 0.9.

The president who chooses to be honest in a certain round obtains 1 point in that round. The president who chooses to be corrupt in a certain round obtains 2 points in that round. If the president is honest in a certain round, then the voter obtains 1 point in that round. If the president corrupts in a certain round, then the voter obtains 0 points in that round. The voter has to pay 1 point to replace a president. Every player has an initial endowment of 5 points. If the voter's points ever reach 0, then the treatment ends.

Summary of the game:

- One candidate is selected to be the president;
- The president makes a choice;
- The voter observes the choice made by the president and decides whether to reelect or replace the president;
- The game continues to a next round with a chance of 85%.

Appendix 2

Proposition 1. *In a centralized democracy with three types of politicians (human, virtuous, and corrupt) there is a good equilibrium in which the president acts responsively and is reelected; but there also exists a bad equilibrium in which the president acts corruptly and is reelected. In other words, concerning the predictions in Theorem 1 in the original model, the introduction of the corrupt type is inconsequential.*

Proof. The only probability on which Theorem 1 depends is the probability ϵ of nature selecting a *virtuous* president. That probability ϵ does not change with the introduction of the *corrupt* type and remains constant across periods, independently of the history of the game. Hence the Bayesian updating for the voter's belief that the next selected politician will be of a *virtuous* type is identical to the Bayesian updating in the original model. Therefore the introduction of the *corrupt* type is inconsequential for the predictions in Theorem 1. □

Proposition 2. *In a federal democracy with three types of politicians (human, virtuous, and corrupt) federal democracy cannot be frustrated at both levels. In other words, concerning the prediction in Theorem 2 in the original model, the introduction of the corrupt type is inconsequential.*

Proof. Suppose that democracy is frustrated at the national level and that, after any history in the game, there is a governor who has not yet acted corruptly. In that case the voter's belief that the governor's type is *corrupt* Bayesian updates to zero. Hence, there is a governor who is either *human*

or *virtuous*. Now suppose that federal democracy is also frustrated at the provincial level. With frustration at both levels the governor does not have any rational incentive to act responsively because *(i)* she expects to be reelected regardless of her behavior, and *(ii)* she does not expect to be promoted to the presidency. In that circumstance the voter's belief that the governor is *virtuous* Bayesian updates to one. But now that the voter knows with certainty that the governor is *virtuous* he is better off promoting that governor to the presidency whenever the president acts corruptly. Hence the president cannot expect to be reelected regardless of her behavior. Therefore federal democracy cannot be frustrated at both levels and the introduction of a *corrupt* type was inconsequential. □