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Abstract: We conduct a laboratorA99(a)3.15786a536(c)xC2.53658(v)465(t)-2.(n)-0.957028(o)-0.9570.956417
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With regard to expropriation, as protection becomes more inclusive, the amount of elites' ill-gotten gains should begin to dissipate given that peasants, who previously were expropriated from, are now part of the coalition itself. Expropriation continues to decrease up until the state assumes full control of the protective apparatus.

The analytical narrative behind efficiency is more complicated. At first, efficiency is very low as investing in economic production is not possible in such a tumultuous environment.

way generate earnings. To generate earnings, a peasant must 1) reside within the domain of one of the four elites and 2) have the elite make an up-front investment in him. At any time, an elite can choose whether to check (or uncheck) a box that enables the peasant to generate 10¢ in earnings every 5th second, at an investment cost (if checked) to the elite of 2¢ every 5th second. The elite must do this for each peasant located within his domain if he wants the peasant to generate earnings. (The elite's investment is subtracted from the participant's total earnings.) The elite cannot unilaterally produce or in any way generate earnings except through peasant production. Likewise, the peasant can only generate wealth with an investment from an elite.

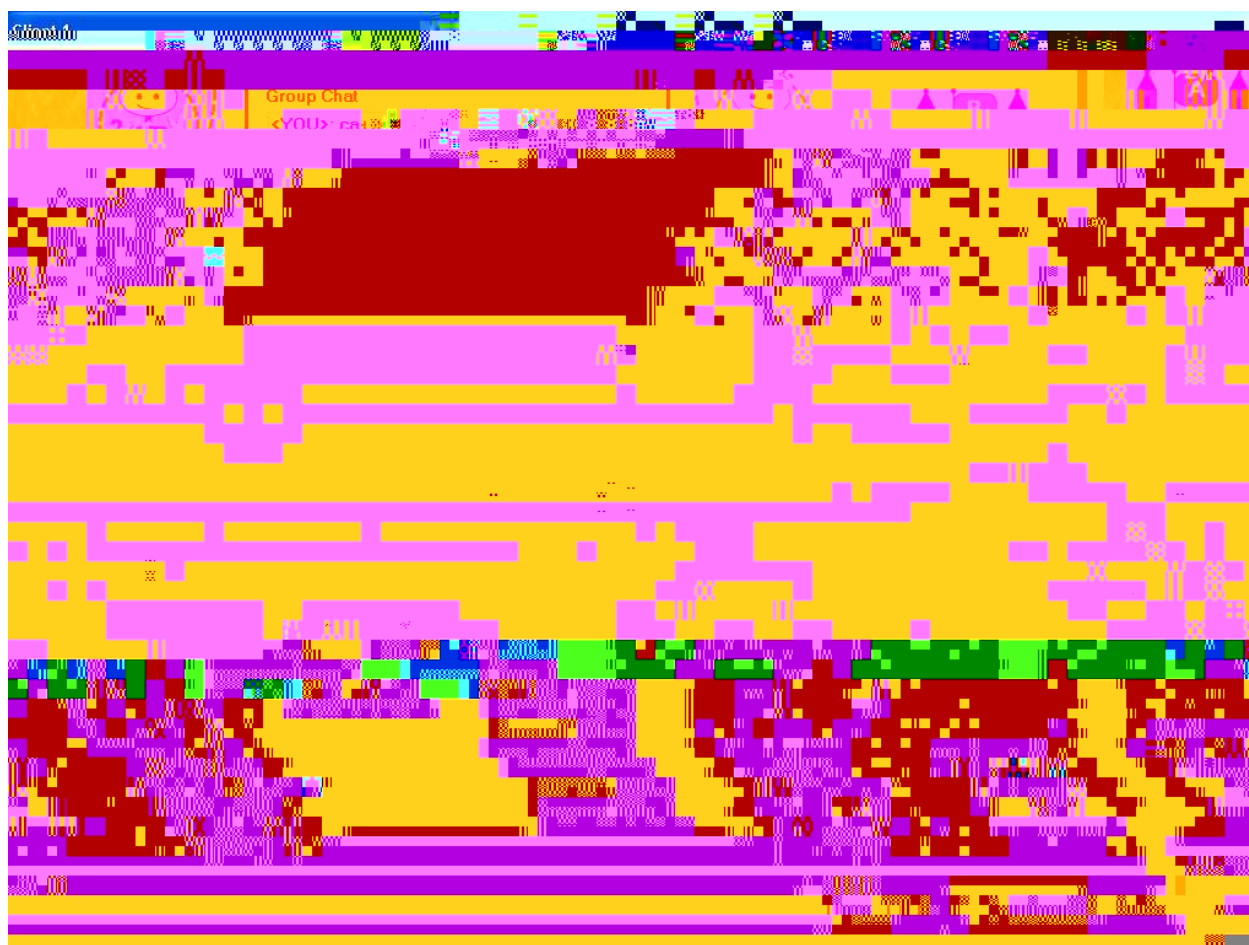




Figure 1. Screenshot from the Perspective of Castle A

An elite has the option of “capturing” or “freeing” any peasant within his domain by clicking an icon,  or , respectively. Elites can also forcibly capture any unclaimed

peasant by right-clicking on an unclaimed peasant in the middle of the screen and selecting the “capture” icon. A captured peasant involuntarily transfers a portion of generated earnings to his elite. To involuntarily transfer earnings, the elite decides the rate of transfer (Figure 2), representing a 21 discrete choices between zero and full expropriation of earnings, inclusive. However, the more that the elite attempts to expropriate from the peasant, the more is lost in

Figure 3. Distribution of Earnings with Involuntary Expropriation

Figure 4. Free Peasant Decision Interface

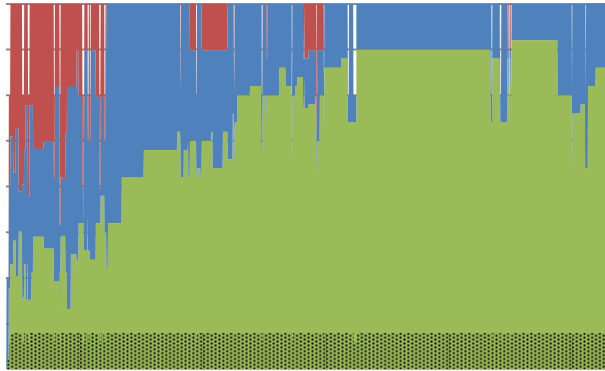
Finally, we incorporate the ability of an elite to war against another elite in order to free

ultimately communication is non-binding, this should not interfere (in theory) with the rationale for competitive outcomes.

3.3 Treatment conditions

We utilize two treatment comparisons to explore how non-competitive pricing emerges within our environment. These treatments center on the role of “access” to the earnings-

What if elites collude in the *3Slot*



Session 2

Session 3

Session 4

Session 5

Figure 6. Stacked Area Graph of Earnings, Waste, and Costs in the 1Slot Treatment

4.1 Overall distribution of earnings

The stacked area graphs in Figures 5 and 6 summarize by session the earnings of the peasants and elites, waste from expropriation, and the investment and shield costs incurred by the elites. Recall that a peasant is able to generate 10¢ every five seconds from a 2¢ investment by an elite. Note that in the *3Slots* treatment, for example, the sum of the earnings and waste need not add up to 80¢ (8 peasants x 10¢/peasant), as peasants without investment by an elite generate 0¢.

Finding 1: *Elites earn more revenue per peasant in the 1Slot treatment than the 3Slots treatment.*

We first note that in the *3Slots* treatment the elites barely secured their opportun

0.9921, one-sided test). Thus we fail to find supp

4.4 *Inter-elite conflict*

Below we report the amount of conflict between the four elites, as manifested in the purchase of cannonballs and shields. Recall that there is little reason to use cannonballs or shields when the elite can only hold one peasant at a time. Each *1Slot* elite is the master of his own domain; any gains from displacing another's peasant cannot be realized by the attacking elite for there is no capacity to house them. This design feature, however, is particularly important for understanding how competing elites in the *3Slots* treatment use and defend against violence. As discussed above, elites in the *3Slots* treatment do not collude on the amounts they

Time	Speaker	Listener	
55	Peasant4	Elite1	i will give you good earnings if you free me
77	Elite1	Peasant4	but i enjoy your company
105	Peasant4	Elite1	then let me changes my rate
112	Elite1	Peasant4	what do you want
127	Peasant4	Elite1	more than .3 cents hahah
134	Elite1	Peasant4	oh haha i didn't realize
135	Elite1	Peasant4	sorry
164	Elite1	Peasant4	is that better?
179	Peasant4	Elite1	ya maybe four cents and I'll be quite haha

451 Peasant4 Elite1 and if you pay me well i wont reble and ask peopel to save em from you
453 Elite1 Peasant4 it costs money to offer the shield protection plan
472 Peasant4 Elite1 look at how much d [Elite4] is making

492 Peasant3 Elite1 ill do 11 minutes is fine
 519 Elite2 Peasant3 well i am now i guess haha

The peasant tries to bargain for a more favorable split by threatening to leave. The peasant further attempts to negotiate with another elite. The first elite, however, is not without his own options.

Time	Speaker	Listener	
526	Peasant5	Elite1	whats the split you want
531	Peasant8	Elite1	castle a you should put me in your castle If you take on me I'll split the money with
548	Peasant3	Elite2	you 50/50 if you want to take on me
560	Peasant3	Elite2	damn nevermind
568	Elite2	Peasant5	what are you trying to offer me?
599	Elite1	Peasant5	75 me 25 for you would be good
651	Elite1	Peasant5	ok i'll release my person now and take you
658	<i>Elite1 kicks out Peasant3.</i>		
660	<i>Elite1 captures Peasant5 from the middle area.</i>		
670	<i>Elite1 frees Peasant5.</i>		
676	<i>Peasant5 sends 7¢ to Elite1.</i>		

Elite1 finds two suitors in place of the disgruntled Peasant3. After receiving a greater offer from one of them, the elite unceremoniously kicks out the conniving peasant and gains a more harmonious relationship as a result.

5. Discussion and conclusion

In this paper, we set out to move beyond the simple dichotomy of competitive and monopolistic provision of protection to explore the richer framework presented in North Wallis, and Weingast. We find that the crucial variables of interest in their framework, access and violence, are indeed a strong determinant of outcomes in terms of both expropriation and efficiency. Specifically, we find that reducing access increases the revenues of the elites by forcing peasants to compete for a favorable earnings ratio, while expanding access decreases the elites' revenues through competition for peasants.

This result parallels that found in a similar experimental context, that of incomplete contracts. For instance, Brown, Falk, and Fehr (2004) find that wages are highest when managers must establish trust in repeated interaction with the same worker, similar to the

relationships described in the chat transcripts above. Through treatment comparison, they find that when managers compete for trustworthy workers, effort rewards are more pronounced than when contracts are enforceable or work assignments are random, again echoing our result. Fehr, Brown, and Zehnder (2009) present an even more related experimental environment as they compare wages when there is an excess supply of workers to when there is an excess supply of managers. Interestingly enough, and contra our result, they do not find a significant difference in the level of wages across the two treatments. They did find, however, that the relationship between managers and workers was shorter when workers could easily find offers with other managers. Finally, Brown and Serra-Garcia (2010) show that when agents can expropriate funds, markets contract accordingly. While not significant, we did see a reduction in investment in peasants in the *3Slots* treatment, an outcome that would perhaps become more manifest as earnings to the elite were even more susceptible to inter-elite competition and consequently extraction by peasants.

While the above result is mostly compatible with existing experimental results, we provide new understanding of destruction under conflict in that while enabling greater access generates more favorable earnings for peasants, it comes at the expense of costly violence

To bring people to your castle, you can capture a person by right clicking on a person and then clicking the icon. Do this now.

<Page 2: Castle>

For every person by your castle, you can **invest** in a person by right clicking on the person and then checking the box next to the icon. Do this now.

You can also **appropriate** a portion of money that a person produces. To set this amount, right click on the person, move the slider, and then click the icon to set your choice. Do this now. You will notice as you **appropriate** money from people, some of what the person produces is lost as waste.


You can free a person by your castle by right clicking on the person and then clicking on the icon. You will be automatically investing in the person when you free him or her. Do this now. A person can choose to voluntarily split the amount of money he or she produces without waste, but the person must be free in order to do so.

If a person is free they can be captured again by right clicking on the person and pressing the icon. Do this now. You can also choose *not* to invest in a person by unchecking the investing box when they are captured.

You can kick a person out of your castle by right clicking on the person and then clicking on the icon. Do this now.


Lastly, people can also voluntarily move themselves to your castle. If they voluntarily move to your castle, you will be automatically investing the8(a)-6.*h B o 208(3P~)-0.957028(n)-0.956""Afi56417

A castle can fire, at most, one cannon ball every 5 seconds. When a castle is struck by a cannon ball it will be stunned for 5 seconds, preventing it from taking any actions.

To protect yourself against a cannon ball attack, you can shield your castle and the people in it by right clicking on your castle and clicking the  icon. While your shield is on, 2 cents are deducted from your earnings every 5 seconds.

When you fire a cannon ball at an unprotected castle, each person in that castle has an independent 100% chance of being freed. When you fire a cannon ball at a protected castle, each person in that castle only has an independent 50% chance of being freed.

<Page 4: Castle and Person>

You may chat with anyone in the experiment using the “Group Chat” frame at the top center of the screen. To send messages, type in the line next to the  icon. Your text will appear in the textbox above and will be visible to everyone. You can also engage in bilateral conversations with any other person or castle in the experiment by clicking on the **Chat** button in the “Individual Chat” frame at the bottom center of the screen.

You are free to discuss all aspects of the experiment, with the following exceptions: you may not reveal your name, discuss side payments outside of the experiment, make threats, or engage in inappropriate language (including such shorthand as

In this experiment you are Person {1, 2, ..., or 8}. In order to earn money, a *castle* must **invest 2 cents** in a person every 5 seconds. Once a *castle* invests money in a person, Persons 1-8 can then produce **10 cents** every 5 seconds.

A castle

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