Online Appendixes for "Does Reform Prevent Rebellion? Evidence from Russia's Emancipation of the Serfs"

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Appendix A: A simple model of rebellion

In this appendix we present a simple model to illustrate the various channels by which reform might affect rebellion. Our model takes the form of a global game, a class of models of collective action under incomplete information.[1] The key assumption of such models is that there is some feature of this environment that is not common knowledge but about which actors receive correlated private signals. In our setting, we assume this to be the cost of rebelling, though we could instead assume incomplete information about some other characteristic, so long as the model continues to satisfy strategic complementarity (actors are better off taking an action if others take the same action) and two-sided limit dominance (there are some signals such that an actor would prefer to take an action even if nobody else does so and other signals such that an actor would prefer not to take that action however many others do so).

In particular, consider a continuum of peasants, indexed by i. Each peasant makes a decision ρ_i to rebel or not, where $\rho_i = 1$ indicates that the peasant rebels. Rebellion is costly, where peasant i bears a cost η_i if $\rho_i = 1$. We assume that the cost of rebellion is correlated across peasants, with $\eta_i = \eta + \epsilon_i$, where η is drawn from a uniform density on the real line and ϵ_i is drawn from a distribution with continuous density with support on the real line. (We follow Morris and Shin (2003) in assuming an "improper" prior belief about η, noting as they do that conditional probabilities are well defined.) Each peasant observes her own idiosyncratic cost but not that of any other peasant before deciding whether to rebel.

The probability of a successful rebellion depends on how many peasants choose to rebel. For simplicity, assume that the probability of a successful rebellion is qh, where h is the (endogenous) proportion of peasants who choose $\rho_i = 1$ and $q \in (0,1)$ is a parameter of the model that captures the ease of rebellion. If a rebellion is successful, then proportion $\gamma \in (0,1)$ of land valued at $\theta > 0$ is divided equally among all peasants who chose $\rho_i = 1$; peasants who chose $\rho_i = 0$ receive a payoff of zero. In contrast, if a rebellion is unsuccessful,

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[1] For an introduction to such models, see Gehlbach (2013).

then any peasant who chose $\rho_i = 1$ receives a payoff of zero, whereas any peasant who chose $\rho_i = 0$ receives a payoff of $\lambda > 0$, where the parameter λ can be understood as the value to any peasant of the existing distribution of land.

This formalization follows, for example, Popkin (1979), who observes that the "political economy approach emphasizes that peasants weigh the risk of trading the status quo for a lottery between successful action and failure. Of course, *no contribution* [i.e., no participation; italics in original] is also a risky situation with lottery elements" (p. 258). In particular, the payoffs capture the idea that there is a benefit to choosing the winning side: rebelling when rebellion is successful, not rebelling when rebellion is unsuccessful. Put differently, we assume the existence of selective incentives to rebellion, as have been documented in various studies of peasant unrest (e.g., Lichbach, 1994). At the cost of additional notation, this stylized assumption can be somewhat relaxed, such that there is a collective benefit to (non)participation (e.g., Bueno de Mesquita, 2010), possibly different for successful and unsuccessful rebellions.

The payoff to any peasant i from choosing $\rho_i = 1$ is therefore

$$qh\left(\frac{\gamma\theta}{h}\right) + (1 - qh) \cdot 0 - \eta_i,$$

whereas the payoff from choosing $\rho_i = 0$ is

$$qh \cdot 0 + (1 - qh)\lambda.$$

The marginal benefit of choosing $\rho_i = 1$ is thus

$$q\gamma\theta - (1 - qh)\lambda - \eta_i.$$

As this expression satisfies assumptions A1–A5 in Morris and Shin (2003), we can use the results there to establish that there is a cutpoint equilibrium, where any peasant i rebels if $\eta_i < \eta^*$ and does not rebel if $\eta_i > \eta^*$, where

$$\eta^* \equiv q\gamma\theta - \lambda \int_0^1 (1 - qh)dh = q\gamma\theta - \lambda\left(1 - \frac{q}{2}\right). \tag{A1}$$

Up to indifference at $\eta_i = \eta^*$, this is the unique strategy surviving iterated elimination of strictly dominated strategies.

Equation A1 says that peasants are more likely to rebel when the ease of rebellion q is high, the payoff from successful rebellion $\gamma\theta$ is large, and the value from the existing distribution of land λ is small. We can use this theoretical framework to think about the potential effects of reform on rebellion. First, reform may affect peasant welfare through the status quo payoff λ, which on average (e.g., across villages with possibly different costs of rebellion) would change the incidence of peasant unrest by moving the cutpoint η^*. Second, by raising expectations about what peasants could claim through collective action, reform may increase the (expected) payoff from successful rebellion $\gamma\theta$, which would have the effect of raising the cutpoint η^*. Notably, this effect would be greatest in regions where land is particularly valuable, that is, where θ is large. Finally, reform may change the ease of rebellion, expressed in the model by the parameter q.

References

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Appendix B: Coding of event data

Disturbance Date

- Start month
- Start year
- End month
- End year

Peasant Type (multiple types possible; categories reflect language in entries)

1. State
2. Landowner
3. Appanage
4. Former state
5. Former landowner
6. Former appanage
7. Temporarily obligated
8. Rebel detachment
9. Soldiers
10. Unknown

Action (multiple actions possible)

Refusal

1. Refusal to obey (general)
2. Refusal to provide obligations
3. Refusal to pay *obrok*
4. Refusal to provide *barshchina*
5. Refusal to purchase lumber
6. Refusal to purchase/drink alcohol
7. Refusal to purchase (other)
8. Refusal to accept terms of liberation (general)
9. Refusal to pay for land
10. Refusal to pay tax
11. Refusal to elect representatives
12. Unauthorized leave
13. Other refusal

Theft and Violence

14. Seizure of landowner's property (general)
15. Seizure of landowner's property (forest/lumber)
16. Seizure of public property
17. (Attempted) destruction of landowner's property
18. (Attempted) destruction of public property

19. (Attempted) destruction of pub (*lavka*)
20. Violence against landlord/family
21. Violence against landlord/family (murder)
22. Violence against management
23. Violence against management (murder)
24. Violence against public authority
25. Prisoners freed
26. Unspecified unrest (inc. *volnenie*: see text for details)

Complaint

27. Complaint to tsar
28. Complaint to grand duke
29. Complaint to justice minister
30. Complaint to minister of internal affairs
31. Complaint to governor
32. Complaint to police
33. Complaint to other
34. Complaint to unknown

Governance

35. Change in estate administration
36. Change in municipal administration

No Peasant Action

37. No peasant action

Cause (multiple causes possible)

Landlord-Peasant Relations

1. Brutal treatment
2. *Barshchina*
3. *Obrok*
4. Provisioning/compensation (from landlord to peasants)
5. Debts
6. Taxes
7. Dissatisfaction with land allotment
8. Violation of inventory/regulatory charter
9. Seizure of crops/livestock
10. Seizure of land
11. Sale of peasants
12. Eviction
13. Resettlement

14. Military enlistment
15. Imprisonment

Serf status

16. Serf status
17. Desire to be released from serf status
18. Desire to be state peasant

Liberation

19. Anticipation of (second) liberation
20. Rumors of liberation
21. Terms of liberation
22. Printed materials dealing with liberation

Estate

23. Dissatisfaction with management
24. Dissatisfaction with municipal government
25. Transfer of estate ownership
26. Dissatisfaction with alcohol prices

Other

27. Other cause

Government Response

1. Military detachment
2. Military detachment (conflict)
3. Prisoners released
4. Imprisonment

Guberniya
Number of villages

1. 1
2. 2
3. 3
4. 4
5. 5
6. > 5
7. Multiple (specific number unspecified)