

January, 2017.

WHY DID THE WEST EXTEND THE FRANCHISE? A CORRECTION*

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ABSTRACT

This paper corrects Proposition 1 in Acemoglu and Robinson (2000). It shows that in addition to parts of the parameter space where the unique MPE is franchise extension and temporary redistribution, there is an intermediate part of the parameter space where the unique MPE is in mixed strategies. In this region, there is a positive probability of franchise extension, but also a revolution takes place with positive probability along the equilibrium path.

*We would like to thank Gabriel Carol, Alex Debs and Harry Di Pei for excellent comments and suggestions.

I. INTRODUCTION

In Acemoglu and Robinson (2000), we advanced the hypothesis that the extension of the voting franchise has often been a response to increasing social unrest, and in particular, it was a credible commitment by the political elite to adopt future economic policies that were more redistributive towards poorer segments of society. We formalized this idea using a simple dynamic game between two types of agents, the rich elite and the poor who form the majority. In this game the arrival of future opportunities for social unrest (or revolution) are stochastic, and thus current promises of future redistribution without a change in political institutions may not be credible. Our Proposition 1 there claims that there exists a critical value of the probability that there will be social unrest in the future, q^* , such that in the space (unique) Markov perfect equilibrium (MPE), when $q > q^*$, redistribution is credible and revolution can be avoided without the extension of the franchise, but when $q < q^*$, redistribution is not credible and the first time there is a (binding) threat of revolution or social unrest, the elite will extend the franchise.

This proposition is incorrect as stated. The correct version is that there exists another threshold $\bar{q} < q^*$, such that when $q \leq \bar{q}$, the MPE involves extension of the franchise whenever there is the threat of revolution. However, when $q \in (\bar{q}, q^*)$, there is no pure-strategy MPE and there is instead a mixed strategy MPE in which the franchise is extended with some probability, but there is also positive probability of a revolution along the equilibrium path.¹

We add that the main take away from this corrected proposition is not different from Proposition 1 in Acemoglu and Robinson (2000), since the emphasis there was on the case where q was small, capturing an environment in which a binding revolution constraint is a rare event, making commitment to future redistribution non-credible (and the two propositions entirely coincide when $q < \bar{q}$). It is interesting as well that the correct version of the proposition also leads to a positive probability of a revolution along the equilibrium path, though this happens for higher values of q .

The rest of this brief note reviews the model from Acemoglu and Robinson (2000), and states and proves the corrected version of their Proposition 1.

¹The same mistake also appears in, and thus the same correction is relevant for, Chapter 6 of our book, Acemoglu and Robinson (2006).

II. REVIEW OF THE MODEL OF ACEMOGLU AND ROBINSON (2000)

Acemoglu and Robinson (2000), henceforth AR, considered an infinite horizon economy with a continuum 1 of agents. Here we present a slightly simplified version of the model (all simplifications are without any loss of generality for the purposes here). A proportion λ of these agents are “poor,” and are denoted by superscript p , while the remaining $1 - \lambda$ form a rich “elite,” denoted by superscript r . Initially, political power is in the hands of the elite, but since $\lambda > 1/2$, under full democracy, the median voter will be a poor agent.

There is a unique consumption good y with price normalized to unity, and each poor agent has productivity (pre-tax income) Ah^p , which we normalize to 1, while each elite agent has productivity $Ah^r = a > 1$.

All agents have identical preferences represented by a linear indirect utility function over post-tax income, and a discount factor $\beta \in (0, 1)$. Post-tax income is given by, $\hat{y}_t^i \equiv (1 - \tau_t)Ah^i + T_t$, for $i = p, r$, where τ_t is the tax rate on income, and $T_t \geq 0$ is the transfer that the agent receives from the state, and the government budget constraint implies $T_t = \tau_t AH$, where $H = (1 - \lambda)h^r + \lambda h^p$. We assume that there is a maximum on the tax rate given by $\hat{\tau} \in (0, 1)$ (which was derived endogenously in AR). For future reference, we denote the post-tax income of the rich elite under the maximum tax rate as $b = (1 - \hat{\tau})a + \hat{\tau}((1 - \lambda)a + \lambda)$, while the post-tax income of the poor under this tax rate is $d = (1 - \hat{\tau}) + \hat{\tau}((1 - \lambda)a + \lambda)$.

The λ poor agents, though initially excluded from the political process, can overthrow the existing government and take over the resources of the economy in any period $t \geq 0$. We assume that if a revolution is attempted, it always succeeds, but a fraction $1 - \mu_t$ of the total resources of the economy get destroyed in the process. Therefore, if there is a revolution at time t , each poor agent receives a per-period return of $\mu_t AH/\lambda$ in all future periods: total income in the economy is $\mu_t AH$ and is shared between λ agents; the elite receive nothing (normalized to zero utility). We assume that μ is stochastic and iid, and takes two values: μ^h and $\mu^l = 0$, with $\Pr(\mu_t = \mu^h) = q$. The fact that μ fluctuates captures the notion that some periods may be more conducive to social unrest than others. In what follows, we simplify the notation by setting $\mu^h AH/\lambda = c$.

Finally, in each period the elite have to decide whether or not to extend the franchise. If it is extended, the economy becomes a democracy, and the median voter, a poor agent, sets the tax rate. If voting rights are extended, they cannot be rescinded, so the economy always

remains a democracy.

The timing of events within a period can be summarized as follows.

1. the state μ is revealed.
2. the elite decide whether or not to extend the franchise. If they decide not to extend the franchise, they set the tax rate.
3. the poor decide whether or not to initiate a revolution. If there is a revolution, they share the remaining output. If there is no revolution and the franchise has been extended, the tax rate is set by the median voter (a poor agent).

III. ANALYSIS

We will focus on Markov perfect equilibria (MPE), which was the main notion used in AR. Let $\sigma^r(\mu, P)$ denote the elite's strategy when the state is $\mu = \mu^h$ or μ^l , and $P = E$ (elite in power) or D (democracy). These strategies are comprised of a decision to extend the franchise $\phi \in \{0, 1\}$ when $P = E$, and a tax rate τ^r when $\phi = 0$ (i.e. when franchise is not extended). When σ^r is mixed, with a slight abuse of notation we instead write the probabilities of these two actions. Clearly, if $\phi = 0$, P remains at E , and if $\phi = 1$, P switches to D forever. Similarly, $\sigma^p(\mu, P|\phi, \tau^r)$ are the actions of the poor which consist of a decision to initiate a revolution, ρ ($\rho = 1$ representing a revolution), and possibly a tax rate τ^p when the political state is $P = D$. The case of mixed σ^p is defined similarly. These strategies are conditioned on the current actions of the elite who move before the poor agents according to the timing of events above. Then, a MPE is a strategy profile, $\{\sigma^r(\mu, P), \sigma^p(\mu, P|\phi, \tau^r)\}$ such that σ^p and σ^r are best-responses to each other in all subgames for all μ and P .

We first impose two assumptions also used in AR (though now stated with the slightly simplified notation introduced above).

The first assumption is

Assumption 1: $(1 - \beta)d + \beta < c$.

This assumption is slightly stronger than requiring that the *revolution constraint* is binding. Specifically, it imposes that if the elite redistribute at the maximum possible rate, giving a utility of d to the poor this period, undertake no further redistribution at any point in the future, then the poor are better off with a revolution starting in the state (μ^h, E) . Since the continuation

utility of no redistribution from tomorrow onwards is β times $1/(1 - \beta)$, while the utility of a revolution starting in the state (μ^h, E) is

$$V^p(R) = \frac{c}{1 - \beta}.$$

Thus Assumption 1 ensures that $d + 1/(1 - \beta) < V^p(R)$.

We also impose

Assumption 2: $d > c$.

This assumption implies that democratization always prevents a revolution, since the per period return from democracy is strictly greater than that from a revolution.

Before stating the corrected proposition, we also simplify the notation and analysis by noting that a revolution in the state (μ^l, E) will give a continuation utility of zero to the poor, who will therefore never undertake a revolution starting in this state. Then in any MPE, the elite will choose no franchise extension and zero redistribution in this state. Also, in democracy, the poor will always set the maximal tax rate, $\hat{\tau}$. Or stated formally,

$$\sigma^p(\mu^l, E|\phi, \tau) = (\rho = 0), \sigma^r(\mu^l, E) = (\phi = 0, \tau = 0), \text{ and } \sigma^p(D) = (\tau = \hat{\tau}).$$

This strategy profile will be part of any (mixed or pure) MPE, and we will not repeat it in Proposition 1.

Proposition 1: Suppose that Assumptions 1 and 2 hold. Then, there exist $q^* \in (0, 1)$ and $\bar{q} \in (0, q^*)$ such that for all $q \neq q^*$ and $q \neq \bar{q}$, there exists a unique MPE with the following properties:

1. If $q \leq \bar{q}$, then the revolution threat will be met by franchise extension. More formally, we have $\sigma^r(\mu^h, E) = (\phi = 1, .)$, $\sigma^p(\mu^h, E|\phi = 0, \tau) = (\rho = 1)$, and $\sigma^p(\mu^h, E|\phi = 1, .) = (\rho = 0, \tau = \hat{\tau})$.
2. If $q > q^*$, then the revolution threat will be met by temporary redistribution. More formally, $\sigma^r(\mu^h, E) = (\phi = 0, \bar{\tau}^r)$ where $\bar{\tau}^r \in (0, \hat{\tau})$, and $\sigma^p(\mu^h, E|\phi = 0, \tau) = (\rho = 0)$ for all $\tau \geq \bar{\tau}^r$. Also, off the equilibrium path, $\sigma^p(\mu^h, E|\phi = 0, \tau) = (\rho = 1)$ for all $\tau < \bar{\tau}^r$.
3. If $q \in (\bar{q}, q^*)$, then the revolution threat will be met by probabilistic franchise extension with positive probability of revolution along the equilibrium path. More formally, the

MPE is in mixed strategies and takes the form: $\sigma^r(\mu^l, E) = (\phi = 0, \tau = 0)$, $\sigma^r(\mu^h, E) = (\Pr\{\phi = 1\} = \hat{p}, \tau = \hat{\tau})$, and $\sigma^p(\mu^h, E|\phi = 0, \hat{\tau}) = (\Pr\{\rho = 1\} = \hat{s})$.

We next establish this proposition, focusing in particular on part 3.

Since, as noted above, in the state (μ^l, E) every MPE involves $\phi = 0$ and $\tau^r = 0$, the values of poor and rich agents, $j = p$ or r , are given by:

$$V^j(\mu^l, E) = Ah^j + \beta(1 - q)V^j(\mu^l, E) + \beta qV^j(\mu^h, E), \quad (1)$$

where $V^j(\mu^h, E)$ is the continuation value in the state (μ^h, E) under the strategy profile being considered.

Suppose next that the elite play $\phi = 0$ and $\tau^r = 0$, that is, they neither extend the franchise nor redistribute to the poor. Then, we would have

$$\tilde{V}^p(\mu^h, E) = V^r(\mu^h, E|\phi = 0, \tau^r = 0) = \frac{1}{1 - \beta}.$$

The revolution constraint is equivalent to: $V^p(R) > \tilde{V}^p(\mu^h, E)$, so that without any redistribution or franchise extension, the poor prefer to initiate a revolution when $\mu = \mu^h$. It is straightforward to verify that this inequality is satisfied under Assumption 1.

In fact, as noted above, Assumption 1 is slightly stronger than this. It ensures, in particular, that starting from state (μ^h, E) maximal redistribution today (which gives d to the poor) and the expectation of no future redistribution is not sufficient to prevent a revolution. Formally,

$$\bar{V}^p(\mu^h, E) = d + \frac{\beta}{1 - \beta} < V^p(R) = \frac{c}{1 - \beta}.$$

The key is whether redistribution without any regime change can prevent a revolution. In an MPE, the most that can be credibly promised to the poor is maximum redistribution whenever the revolution constraint binds, i.e., when $\mu = \mu^h$, and no redistribution when $\mu = \mu^l$. Mathematically, the value of the poor in this case is given by

$$V^p(\mu^h, E) = d + \beta qV^p(\mu^h, E) + \beta(1 - q)V^p(\mu^l, E). \quad (2)$$

Combining this with (1), we obtain the maximal value of poor agents in the state where the revolution constraint binds (starting from state (μ^h, E)) without transition to democracy as

$$V^p(\mu^h, E) = \frac{(1 - \beta(1 - q))d + \beta(1 - q)}{1 - \beta}. \quad (3)$$

The critical value of q above which the threat of revolution can be met without democratizing, q^* , can be obtained by setting this expression equal to the value of a successful revolution for the poor, i.e., $V^p(R) = c/(1 - \beta)$. Thus

$$(1 - \beta(1 - q^*))d + \beta(1 - q^*) = c,$$

or solving this equation out,

$$q^* = \frac{\beta(d - 1) - d + c}{\beta(d - 1)}. \quad (4)$$

It can be verified that our assumptions so far ensure that $q^* \in (0, 1)$. In particular, if we take $q^* = 0$, the left-hand side would be $(1 - \beta)d + \beta$, which must be less than the right-hand side, c , by Assumption 1. If we take $q^* = 1$, then the left-hand side would be d , which has to be greater than the right-hand side by Assumption 2.

It is now straightforward to see that when $q > q^*$, the first part of Proposition 1 applies as in AR, since the elite can prevent a revolution by just redistributing when the threat of revolution is binding. In what follows, we suppose that $q < q^*$.

To understand the second critical threshold, \bar{q} , consider the strategy of extending the franchise for the elite (when $q < q^*$). This gives the poor a utility of

$$V^p(D) = \frac{d}{1 - \beta}$$

starting from state (μ^h, E) . Now consider a deviation by the elite of just redistributing at the maximal rate but not extending the franchise. The value to the poor following this deviation, and under the Markovian strategy of the rich elite extending the franchise next time the state is (μ^h, E) can be written as

$$\tilde{V}^p(\mu^h, E) = d + \beta q V^p(D) + \beta(1 - q) \tilde{V}^p(\mu^l, E), \quad (5)$$

and in this case,

$$\tilde{V}^p(\mu^l, E) = 1 + \beta q V^p(D) + \beta(1 - q) \tilde{V}^p(\mu^l, E),$$

which implies

$$\tilde{V}^p(\mu^h, E) = d + \frac{\beta q V^p(D)}{1 - \beta(1 - q)} + \frac{\beta(1 - q)}{1 - \beta(1 - q)}.$$

Now \bar{q} is defined such that

$$\tilde{V}^p(\mu^h, E) = V^p(R),$$

which can be solved to yield

$$\bar{q} = \frac{\beta(d-1) - d + c}{\beta(d-1) + \beta \frac{d-c}{1-\beta}}.$$

Comparing this to the expression for q^* in (4), we can see that both variables have the same numerator and q^* has a smaller denominator, and thus $\bar{q} < q^*$.²

This argument then implies that whenever $q \leq \bar{q}$, following a deviation by the elite in the presence of the threat of revolution, the revolution will materialize. This then establishes the second part of the proposition—the only option available to the elite is to extend the franchise. What happens when $q \in (\bar{q}, q^*)$? The important observation (and the reason why Proposition 1 in AR requires modification) is that following a deviation by the rich elite, under the expectation that there will be franchise extension next time the state is (μ^h, E) , it is optimal for the poor not to undertake a revolution today. This then makes the deviation for the elite profitable, and establishes that there is not a pure strategy MPE with immediate extension of the franchise following the threat of the revolution.

We next prove that in this part of the parameter space, there is instead a mixed strategy MPE (and that this is unique). A mixed strategy MPE requires the elite to be indifferent between extending and not extending the franchise, so that they mix between $\phi = 0$ and $\phi = 1$. But suppose that there is no revolution along the equilibrium path. Then not extending the franchise would always be beneficial for the elite (which we show formally below). To see this, let us use the same derivation as the one that led to (3) to obtain the value of the rich following

²That $\bar{q} < q^*$ can also be seen by comparing (2) to (5). Rearranging the former expression, we can write

$$V^p(\mu^h, E) = d + \beta q V^p(\mu^h, E) + \beta(1-q) \frac{1 + \beta q V^p(\mu^h, E)}{1 - \beta(1-q)},$$

while the latter one yields

$$\tilde{V}^p(\mu^h, E) = d + \beta q V^p(D) + \beta(1-q) \frac{1 + \beta q V^p(D)}{1 - \beta(1-q)}.$$

Since

$$V^p(\mu^h, E) < V^p(D),$$

the comparison of these two expressions immediately implies that

$$V^p(\mu^h, E) < \tilde{V}^p(\mu^h, E).$$

Since these two expressions have to be equal to each other (and to $V^p(R)$) and both are decreasing in q , the conclusion that $\bar{q} < q^*$ immediately follows.

such a deviation. This can be written as

$$\tilde{V}^r(\mu^h, E) = b + \frac{\beta q V^r(D)}{1 - \beta(1 - q)} + \frac{\beta(1 - q)a}{1 - \beta(1 - q)},$$

which is always strictly greater than $V^r(D)$ since $a > b$. Therefore, without revolutions along the equilibrium path, we cannot have a mixed MPE. This implies that the poor must be indifferent between revolution and no revolution (between $\rho = 0$ and $\rho = 1$), and must choose a revolution with positive probability following $\phi = 0$ (no extension of the franchise by the elite) in the state with the threat of revolution, (μ^h, E) .

Now putting all of these together, and denoting the probability that the elite extend the franchise in the state (μ^h, E) by p , and the probability that the poor undertake a revolution following a no extension of the franchise in this state by s , we can write the values of the elite and the poor (denoted with a “ $\hat{\cdot}$ ” to distinguish it that resulted under pure strategies). We start with the value of the elite when they choose not to extend the franchise:³

$$\hat{V}^r(\mu^h, E|\phi = 0) = (1 - s)[b + \beta q \hat{V}^r(\mu^h, E) + \beta(1 - q)\hat{V}^r(\mu^l, E)].$$

Equation (6) also incorporates that following a decision of $\phi = 1$, the poor will undertake a revolution with probability s , leading to a continuation value of zero for the elite. The continuation values are written independent of the current action, since in the mixed strategy equilibrium, both actions will give the same continuation utility. Moreover, we have that an immediate extension of the franchise has value

$$\hat{V}^r(\mu^h, E|\phi = 1) = V^r(D)$$

for the rich. Using the fact that $\hat{V}^r(\mu^h, E|\phi = 0) = V^r(D)$, we obtain that unique value of $\hat{s} \in (0, 1)$ consistent with a mixed strategy MPE. That this probability is indeed between 0 and 1 can be seen by setting it equal to $s = 0$, which immediately implies that in that case, the elite would always strictly prefer not to extend the franchise, and then setting it equal to $s = 1$,

³Note that here we have written the deviation of the rich as no extension of the franchise ($\phi = 0$) but maximal redistribution (giving themselves a per-period return of b , and the poor one of d). That any MPE must have this property can be seen with the following argument. Suppose that exists a mixed MPE where the elite choose $(\phi = 0, \tau < \hat{\tau})$ with positive probability in the state (μ^h, E) . This can only be part of a mixed MPE if the poor choose revolution with probability less than 1, and thus this profile must give the poor value exactly equal to $V^p(R)$. Then if the elite were to deviate to $(\phi = 0, \tau + \varepsilon)$ for $\varepsilon > 0$ and small, then this must give the poor a value strictly greater than $V^p(R)$, and thus would ensure no revolution. For ε sufficiently small, this would be strictly profitable for the elite, implying that there cannot exist an MPE of this sort.

which yields that the elite would then always strictly prefer to extend the franchise; thus the unique solution must be strictly between 0 and 1.

Next moving to the poor, we similarly have the value function

$$\hat{V}^p(\mu^h, E; \phi = 0 | \rho = 0) = d + \beta q [pV^p(D) + (1 - p)\hat{V}^p(\mu^h, E | \phi = 0)] + \beta(1 - q)\hat{V}^p(\mu^l, E). \quad (6)$$

Here, the conditioning on $\phi = 0$ in $\hat{V}^p(\mu^h, E; \phi = 0)$ designates that this is the value function of the poor after they see a no franchise extension decision by the elite in the state (μ^h, E) . For a mixed strategy equilibrium, we again need this value function to be the same as the alternative for the poor, which is revolution, i.e.,

$$\hat{V}^p(\mu^h, E; \phi = 0 | \rho = 0) = \hat{V}^p(\mu^h, E; \phi = 0 | \rho = 1) = V^p(R) = \frac{c}{1 - \beta},$$

which defines the unique value of $\hat{p} \in (0, 1)$ consistent with a mixed MPE. Once again to verify that this probabilities strictly between 0 and 1, it suffices to evaluate this condition for $p = 0$ and $p = 1$. When it is the former, the poor clearly strictly prefer revolution, and when it is $p = 1$, they strictly prefer no revolution. This analysis thus establishes the third part of Proposition 1.

This analysis also clarifies why for intermediate values of q , the MPE is in mixed strategies. What incentivizes the poor to use their current (de facto) political power to carry out a revolution is the prospect that the future is not very attractive under political institutions that vest all (de jure) power in the hands of the elite. When the future just involves temporary redistribution (whenever the state is again (μ^h, E)), the probability of this redistribution occurring, q , needs to be sufficiently high, in particular, greater than q^* . But crucially, and herein lies the reason why in the intermediate region a pure strategy equilibrium does not exist, the value from a democratic transition to the poor, $V^p(D)$, is strictly greater than their value from a revolution in state (μ^h, E) , $V^p(R)$. This implies that the future prospect of democratic transition is more attractive than the future temporary redistribution that the elite would choose (which would give them just the value they would get from a revolution, $V^p(R)$), and thus promises of future franchise extension for values close to but less than q^* would discourage revolution. This reasoning implies that for such values, we cannot have an equilibrium in which the elite immediately extend the franchise whenever they are faced with the threat of revolution. But we also cannot have an equilibrium in which they never extend the franchise, because in that

case the poor would strictly prefer to undertake a revolution the first time they have the opportunity. This then implies that the equilibrium for intermediate values of q must be in mixed strategies.

IV. CONCLUSION

This brief note corrected Proposition 1 in Acemoglu and Robinson (2000). In contrast to the claim there, the Markov perfect equilibrium (MPE) in the dynamic political game described in the paper is not always in pure strategies. The characterization of the parameter space where different types of equilibria emerge was in terms of the probability that there will be a future threat of revolution (or possibility of social unrest), q . Proposition 1 then claimed that there existed a critical threshold $q^* \in (0, 1)$ such that the unique MPE involved immediate franchise extension when $q < q^*$, and it involved temporary redistribution without a transition to democracy when $q > q^*$.

The corrected version of the proposition shows that there exists another threshold $\bar{q} \in (0, q^*)$, and the unique MPE indeed involves immediate transition to democracy when $q < \bar{q}$ and temporary redistribution with no change in political institutions when $q > q^*$, but in the intermediate region where q is between \bar{q} and q^* , the unique MPE is in mixed strategies. Perhaps most interestingly, in this part of the parameter space, there is a positive probability of a revolution along the equilibrium path.

The main reason why mixed strategies emerge is that a transition to democracy gives strictly higher utility to the poor than their threat point, which is carrying out the revolution. This implies that if the probability that the threat point become active again in the near future is not too low, the threat is not as effective and the elite will not find it in their interest to extend the franchise when the poor expect the future expansion of the franchise to arrive soon. But of course, no extension of the franchise cannot be an equilibrium either, because this would induce the poor to carry out the revolution right away. Consequently, the equilibrium must involve mixed strategies.

This mixed strategy region notwithstanding, the economic content of this new proposition is not different than Proposition 1 in the original article, since the main focus there was on small values of q , corresponding to an infrequent threat of revolution, making commitment to future redistribution difficult for the elite. For small values of q , the results are the same. The

differences for intermediate values of q , in which case there is again franchise extension, but this takes place probabilistically.

REFERENCE

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