Democratization as a Continuous Choice: A Comment on Acemoglu and Robinson's Correction to "Why Did the West Extend the Franchise?"

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Acemoglu and Robinson recently provided a correction to proposition 1 in "Why Did the West Extend the Franchise" (Acemoglu and Robinson 2000), showing that for intermediate values of q (the probability of social unrest in the future) the unique Markov perfect equilibrium is in mixed strategies. We discuss this correction in the context of a recent generalization of the Acemoglu-Robinson model that allows for a continuous institutional choice by the elite. In that environment, no correction is necessary: there is a unique threshold q^* such that the elite liberalizes if $q < q^*$ and does not liberalize otherwise. Moreover, the main empirical prediction of Acemoglu and Robinson (2000) generalizes: not only does the elite not liberalize when the excluded group poses a frequent threat of unrest, but conditional on some representation having been granted, the level of representation is decreasing in the probability of unrest.

Acemoglu and Robinson (2000) launched a productive research program that has reinvigorated the study of political transitions. As is often the case with successful modeling enterprises, the appeal of the Acemoglu-Robinson model lay not only in its elegance but in its capacity to produce a surprising result. Naive intuition suggests that an expansion of the franchise to include the poor should be more likely, the more often the poor pose a threat to the elite. The Acemoglu-Robinson model generates precisely the opposite prediction. In the Acemoglu-Robinson model, democratization is a way of committing to future redistribution when such promises are otherwise not credible. Because the elite have an incentive to redistribute when the poor pose a credible threat of unrest (i.e., when the poor have "de facto political power"), democratization is not necessary when the probability of future unrest is high. It is when the poor only occasionally pose a threat of unrest that the elite have an incentive to respond to that unrest by democratizing.

Without overturning this basic result, Acemoglu and Robinson (2017) provide an important correction to proposition 1 in Acemoglu and Robinson (2000), which characterizes equilibrium in their model in terms of the parameter q, which measures the probability of future unrest. Proposition 1 of Acemoglu and Robinson (2000) states that there exists a threshold q^* such that, if $q < q^*$, then the elite democratize the first time that the poor pose a credible threat of unrest, whereas if $q > q^*$, then the elite redistribute whenever the poor have de facto political power. Acemoglu and Robinson (2017) show that the correct proposition instead takes the following form: there exist two thresholds, $\bar{q}$ and q^*, with $\bar{q} < q^*$. If $q \leq \bar{q}$, then the elite democratize the first time that the poor pose a credible threat of unrest, whereas if $q \geq q^*$, then the elite

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redistribute whenever the poor have de facto political power. However, if $q \in (\bar{q}, q^*)$, then the unique Markov perfect equilibrium is in mixed strategies, with the elite democratizing with some probability strictly between 0 and 1 and with positive probability of revolution on the equilibrium path.

Why is proposition 1 in Acemoglu and Robinson (2000) incorrect? The technical answer is that the equilibrium analysis in that article does not check against all possible deviations—in particular, for the case $q < q^*$, a deviation by the elite to offering maximal redistribution whenever the poor pose a credible threat of unrest, holding constant the elite's equilibrium strategy to extend the franchise the first time that the poor subsequently have de facto political power. Such a deviation is profitable to the elite if the poor respond by not revolting. That this may be possible in principle follows from the fact that democratization only works as a commitment device when the value to the poor from democracy, in which redistribution is maximal in every period, is greater than that from revolution. If the poor are sufficiently patient, maximal redistribution in the current period, while deferring franchise expansion to the next time that the poor pose a credible threat of unrest, is sufficient to prevent revolution.

In this short article, we show that the deviation identified by Acemoglu and Robinson (2017) is a consequence of modeling democratization as a discrete choice—an assumption made for convenience not verisimilitude. Acemoglu and Robinson (2000) themselves note that the franchise was extended multiple times in Britain—in 1832, 1867, 1884, 1919, and 1928—implying that the population of eligible voters could be chosen with considerable precision.[1] More broadly, the design of democratic institutions extends far beyond the franchise, with numerous opportunities for fine-tuning as elites surrender formal power (Albertus and Menaldo 2018). In particular, as Corvalán, Querubín, and Vicente (2018) demonstrate, any extension of the franchise can be partially offset by raising the eligibility requirements for holding office. Finally, in general, "democratization" can imply any transfer of authority to some previously excluded group, as when Tsar Alexander II created institutions of local self-government with varying degrees of peasant representation (Nafziger 2011).

In a recent article, Castañeda Dower et al. (2018) instead assume that the elite can choose any level of representation between 0 and 1, where "representation" is the probability that the (previously) excluded group has agenda-setting power in any period in a liberalized regime. In this generalized environment, the equilibrium level of representation chosen by the elite whenever the excluded group has de facto political power provides the excluded group with precisely its value from revolution. As a consequence, "liberalization" (the generalized analogue to "democratization" in Castañeda Dower et al.) is immune to the deviation identified by Acemoglu and Robinson (2017), and the unique Markov perfect equilibrium in Castañeda Dower et al. (2018) is in pure strategies.

The purpose of Castañeda Dower et al.'s (2018) generalization of the Acemoglu-Robinson model is to demonstrate that the key empirical prediction highlighted above extends to their empirical setting. The analysis in Castañeda Dower et al.'s article, summarized below, shows that the key comparative static result in Acemoglu and Robinson (2000) generalizes: not only are the elite less likely to liberalize when the excluded group poses a more frequent threat of unrest, but conditional on some representation having been granted, the equilibrium level of representation is decreasing in the probability of future unrest. This prediction distinguishes the Acemoglu-Robinson model and its cousins from other extant models of political transitions.

This short article proceeds as follows. We first revisit Acemoglu and Robinson's (2017) correction in a setting that abstracts from the economic environment in Acemoglu and Robinson (2000). Following this, we review the generalization of the Acemoglu-Robinson model and associated analysis in Castañeda Dower et al. (2018), referring interested readers to that article for a complete exposition. We then demonstrate that the equilibrium behavior stated in Castañeda Dower et al. (2018) is immune to the deviation identified by Acemoglu and Robinson (2017), and we compare predictions from the two models. We offer concluding thoughts in the final section.

A RESTATEMENT OF ACEMOGLU AND ROBINSON (2017)

In this section, we reexamine the issue identified by Acemoglu and Robinson (2017). We do so in the context of a simplified version of their model that abstracts from the economic environment in Acemoglu and Robinson (2000) and (2017). In particular, we assume a simple divide-the-pie environment, in which in any period that a revolution has not taken place an infinitely divisible resource of size 1 is divided between an elite (e) and a majority (m), considered as unitary actors. We let x_t denote the share of the resource received by the majority in period t. The game begins in an "unliberalized" regime. In this regime, the elite chooses x_t, subject to the constraint that the majority chooses not to

1. Acemoglu and Robinson (2006) consider partial franchise extension in a model in which the elite can (discretely) extend the franchise to the middle class but not the poor. See also Acemoglu and Robinson (2008), in which the loss of de jure political power can be compensated by investments in de facto political power.

revolt. Analogously to the Acemoglu-Robinson model, we assume that the cost of revolution is a random variable $\mu \in \{\kappa, 1\}$, where $\kappa \in (0, 1)$ and in any period $\Pr(\mu = \kappa) = q$. If the majority revolts, it receives $1 - \mu$ in that and all subsequent periods; the elite receives a payoff equal to $-c$, where $c > 0$.[2] The elite can attempt to prevent revolution by transitioning to a "democracy," in which case the majority receives the entire contested resource in perpetuity. The elite and majority discount future payoffs according to the common discount factor δ. We assume $\delta > \kappa$, which corresponds to assumption 1 in Acemoglu and Robinson (2017): the majority prefers revolution to maximal redistribution for a single period:

$$\frac{1-\kappa}{1-\delta} > 1.$$

Standard analysis (e.g., Gehlbach 2013) implies that maximal redistribution whenever $\mu = \kappa$ is able to prevent revolution if

$$\frac{1-\delta(1-q)}{1-\delta} \geq \frac{1-\kappa}{1-\delta},$$

that is, if

$$q \geq q^{\star} \equiv \frac{\delta - \kappa}{\delta}.$$

We proceed to analyze the case $q < q^{\star}$. By assumption, revolution is more costly to the elite than democratization, and the majority prefers democratization to revolution. This does not imply, however, that in equilibrium the elite necessarily democratizes the first time that $\mu = \kappa$. Rather, as Acemoglu and Robinson (2017) demonstrate, for certain parameter values the elite has an incentive to deviate from this strategy to maximal redistribution, holding constant its equilibrium strategy of democratizing the next time that $\mu = \kappa$. Clearly this is preferable to the elite so long as the majority does not revolt, as the elite benefits (in expectation) from deferred democratization. For democratization to be optimal, the poor must therefore prefer revolution to maximal redistribution in the current period, with democratization the next time that $\mu = \kappa$:

$$\frac{1-\kappa}{1-\delta} \geq 1 + \frac{\delta q}{1-\delta(1-q)} \times \frac{1}{1-\delta}.$$

Expressing this condition in terms of q gives

$$q \leq \bar{q} \equiv \frac{\lambda\delta - \kappa}{\lambda\delta},$$

where we define $\lambda \equiv 1 - (\delta - \kappa) < 1$. By assumption, $\delta > \kappa$, so $\lambda < 1$, and therefore $\bar{q} < q^{\star}$.

In sum, when $q \geq q^{\star}$, the elite redistributes whenever $\mu = \kappa$, whereas when $q \leq \bar{q}$, the elite democratizes the first time that $\mu = \kappa$. In contrast, when $q \in (\bar{q}, q^{\star})$, there is no equilibrium in pure strategies. Acemoglu and Robinson (2017) show that in this intermediate case, the unique equilibrium is in mixed strategies. They do not explicitly solve for these strategies, but it is straightforward to do so in the setting here:

$$p = \frac{(1-\delta)[\delta(1-q)-\kappa]}{\kappa\delta q}, \tag{1}$$

$$s = \frac{\delta(1-q)}{\delta(1-q) + c[1-\delta(1-q)]},$$

where p is the probability that the elite democratizes (rather than fully redistributing) when $\mu = \kappa$, and s is the probability that the majority revolts when $\mu = \kappa$ and the elite does not democratize.[3]

CASTAÑEDA DOWER ET AL.'S (2018) GENERALIZATION OF THE ACEMOGLU-ROBINSON MODEL

The Castañeda Dower et al. model departs from the Acemoglu-Robinson model in one fundamental way: rather than modeling a discrete institutional choice, it assumes that the elite can "liberalize" (once and for all) by choosing any level of majority representation $\rho \in (0, 1)$. The variable ρ governs the Markov process in a liberalized (L) regime: in any period t following liberalization (including the period of liberalization itself), with probability ρ the majority has control rights over policy (denoted $\alpha = m$) and therefore chooses x_t, whereas with probability $1 - \rho$ the elite chooses x_t (i.e., $\alpha = e$). The majority may choose to revolt following choice of x_t, with the process that determines the cost of revolution identical in a liberalized and unliberalized (U) regime. (During the period of liberalization itself, we assume that the liberalized regime "inherits" the value of μ realized in the unliberalized regime.) The state space in a liberalized regime is therefore

$$\{(L, \kappa, m), (L, \kappa, e), (L, 1, m), (L, 1, e)\},$$

2. The economic environment and this payoff can be interpreted as follows: redistribution takes the form of taxation, with an upper bound on the tax rate that implies taxable income greater than what would survive in the event of revolution. Then the infinitely divisible resource is taxable income, and c is forgone nontaxable income.

3. To derive p, we set the value to the majority from revolution equal to that from not revolting when the elite maximally redistributes; the latter value is a function of p, as with that probability the elite democratizes the next time that $\mu = \kappa$. A similar calculation gives the equilibrium value of s.

whereas that in an unliberalized regime is $\{(U, \kappa), (U, 1)\}$. We assume that the random variables μ and α are drawn independently, so that in a liberalized regime the state is (L, κ, m) with probability $q\rho$, and so on. We can summarize the timing of events within any period as follows: (1) The cost of revolution μ is realized. (2) In an unliberalized regime, the elite chooses x_t or liberalizes by selecting ρ. In a liberalized regime (including if the elite just liberalized), the majority or elite chooses x_t, according to ρ. (3) The majority decides whether to revolt.

As discussed above, the elite is able to prevent revolution without liberalization if $q \geq q^* = (\delta - \kappa)/\delta$. In what follows, we therefore restrict attention to the case $q < q^*$, which implies that the elite must liberalize to avoid revolution. To derive the optimal level of liberalization ρ, consider each of the four possible states in a liberalized regime. Clearly, when the majority has control rights over policy—that is, when the state is (L, κ, m) or $(L, 1, m)$—it chooses $x = 1$, keeping the entire resource for itself. Similarly, when the elite has control rights over policy and the majority does not pose a credible threat of unrest—that is, in the state $(L, 1, e)$—the elite chooses $x = 0$. The interesting analysis occurs in the state (L, κ, e). The value to the majority in this state is given by the Bellman equation

$$V_m(L, \kappa, e) = \tilde{x} + \delta V_m(L), \tag{2}$$

where $V_m(L)$ is the continuation value to the majority common to the four states:

$$\begin{aligned} V_m(L) = {} & q\rho V_m(L, \kappa, m) + q(1-\rho)V_m(L, \kappa, e) \\ & + (1-q)\rho V_m(L, 1, m) + (1-q)(1-\rho)V_m(L, 1, e). \end{aligned}$$

In a Markov perfect equilibrium, $V_m(L) = [\rho + (1-\rho)q\tilde{x}]/(1-\delta)$, as in any future period the majority receives the entire resource with probability ρ (i.e., when it has control rights over policy) and $\tilde{x}$ with probability $(1-\rho)q$ (i.e., when the elite has control rights over policy but the majority poses a credible threat of unrest). Substituting this into equation (2), and setting that equal to the value from revolution ($[1-\kappa]/[1-\delta]$), gives the optimal division of the resource as a function of ρ:

$$\tilde{x}(\rho) = \max\left[\frac{1-\kappa-\delta\rho}{1-\delta+\delta q(1-\rho)}, 0\right] \tag{3}$$

for $\rho \geq [\delta(1-q)-\kappa]/[\delta(1-q)]$. (If $\rho < [\delta(1-q)-\kappa]/[\delta(1-q)]$, redistribution cannot prevent revolution.)

Equation (3) illustrates the trade-off for the elite when choosing the level of liberalization ρ. When ρ is large, the elite can make smaller concessions in the state (L, κ, e), as the majority anticipates that it will often be in a position to choose policy itself in a liberalized regime. But, when ρ is small, the majority is only occasionally able to dictate policy to the elite. Castañeda Dower et al. (2018) show that the optimal choice of ρ privileges the second consideration over the first, so that the elite chooses

$$\rho^* = \frac{\delta(1-q)-\kappa}{\delta(1-q)}, \tag{4}$$

which in turn implies that the elite provides $x = 1$ in the state (L, κ, e). Intuitively, it is comparatively cheap to relax the "no-revolution constraint" in the state (L, κ, e) by maximizing redistribution, as the elite finds itself in that state with probability less than 1. At the same time, increased representation is inefficient, as it induces redistribution even when the poor do not have de facto political power.

In a liberalized regime, the majority receives the entire resource except in those periods in which the elite has control rights over policy and the majority does not pose a credible threat of unrest, in which case the majority receives none of the resource.

RELATIONSHIP OF CASTAÑEDA DOWER ET AL. (2018) TO ACEMOGLU AND ROBINSON (2017)

In the Castañeda Dower et al. model, as shown above, in any period in which $\mu = \kappa$ (including the period of liberalization), the equilibrium choice of ρ leaves the majority indifferent between liberalization and revolution. It immediately follows that there is no incentive for the elite to deviate by delaying liberalization until the majority next has de facto political power, as the value to the majority from this deviation,

$$1 + \frac{\delta q}{1-\delta(1-q)} \times \frac{1-\kappa}{1-\delta},$$

is strictly less than the value from revolution if $q < (\delta - \kappa)/\delta$, which is the case we are considering.

It is instructive to compare empirical predictions from the two models. In the Acemoglu-Robinson model, as corrected, the probability of democratization is strictly decreasing in q for $q \in (\bar{q}, q^*)$ (see eq. [1]), whereas when $q \leq \bar{q}$, the elite democratizes with certainty. In contrast, in the Castañeda Dower et al. model, the level of liberalization is strictly decreasing in q for all $q < q^*$. Figure 1 illustrates this comparison.[4] The key empirical prediction of Acemoglu and Robinson (2000) thus holds qualitatively under the corrected analysis in Acemoglu and Robinson (2017) and above, but the Castañeda Dower et al. model more plausibly represents this as a smooth relationship between the probability of

4. As depicted, the curves in fig. 1 may cross at some $q \in (\bar{q}, q^*)$. This can be verified by noting that $\partial\rho^*/\partial q < \partial p/\partial q$ at $q = q^*$ if $1 - \delta < \delta - \kappa$, which is not precluded by any assumption made above.

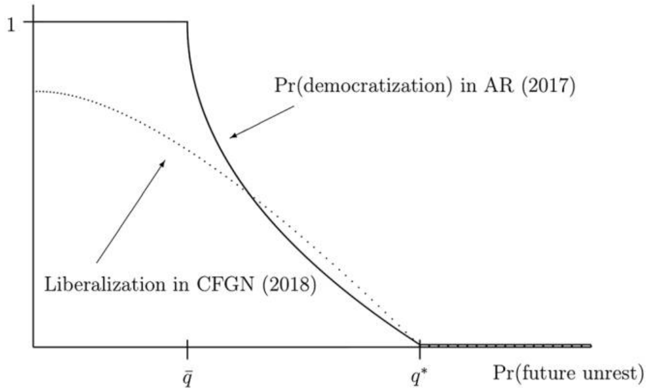

Figure 1. Probability of democratization (*solid*) and level of liberalization (*dotted*) in the Acemoglu-Robinson and Castañeda Dower et al. models, respectively. The two quantities coincide at zero for $q \geq q^*$.

future unrest and the degree of institutional change, with “partial democratization” for any value of $q < q^*$.

CONCLUDING THOUGHTS

Acemoglu and Robinson (2000) model democratization as a discrete choice. A consequence of this modeling decision, as Acemoglu and Robinson (2017) demonstrate, is that the unique Markov perfect equilibrium is in mixed strategies for intermediate values of q, which measures the probability of future unrest. In this short article, we show that the unique equilibrium is instead in pure strategies for all values of q if we allow the elite to choose any level of representation between 0 and 1. Intuitively, when the elite can grant any level of political representation, it will never surrender more power than necessary, thus eliminating the incentive for the elite to deviate from a pure strategy in the manner discussed by Acemoglu and Robinson (2017).

The analysis above demonstrates that the key empirical prediction of the Acemoglu-Robinson model generalizes. Not only is liberalization of any sort less likely when the probability of future unrest is high, but the degree of liberalization is negatively related to the same variable. As Castañeda Dower et al. (2018) show, this prediction can usefully guide empirical work, given the typical setting in which elites can surrender any share of power to an excluded majority.

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