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## Why is there no revolution in North-Korea? The political economy of revolution revisited

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**Why is there no Revolution in North-Korea?**  
The Political Economy of Revolution Revisited

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**Abstract**

*In this paper the political economy of revolutions is revisited, as it has been developed and applied in a number of publications by Acemoglu and Robinson. We criticize the fact that these authors abstract from collective-action problems and focus on inequality of income or wealth instead. In doing so, they reanimate a long but misleading tradition in social sciences, namely to directly deduct prospective group behavior from the collective interest of a group. We show that, because of collective-action problems, income inequality is not a sufficient condition for a revolution to occur. Furthermore, we also show that inequality does not even need to be a necessary condition, since all what is needed in order for a group to be interested in a revolution is that this group as a whole can expect to be a beneficiary of a revolution. For the latter to apply, however, inequality is not necessary. Hence, not inequality but rather a certain structure of commitment devices or their absence is crucial for explaining why revolutions sometimes occur and sometimes not.*

*JEL Classification Code:* D72; D74; O15; P16

*Keywords:* Credible Commitments; Dictatorship; Political Economy, Redistribution

## 1. Introduction

It has long been common in both political philosophy and in public opinion to infer from unjust governments to revolutions. According to this view, the ruling elite must not allow inequality of income or wealth to exceed a certain threshold unless they want to risk political uprisings. If that were the case than even the worst dictator were, to a certain extent, checked by his citizens in a way which somehow resembles the checks and balances of a democracy. In a world without transaction costs, democracy would even be superfluous. Doubtlessly, the most influential author from that tradition of thinking about revolutions was *Karl Marx* with his view that history of mankind is a history of class struggles.<sup>1</sup>

Modern social scientists, however, have severely criticized the class-struggle view (see *Buchanan*, 1979; almost classical: *Popper*, 1945: 89-218). For Marxists, the most devastating criticism was based on methodological grounds, namely that the class-struggle is plagued from the *fallacy of composition*.<sup>2</sup> Applied to the Marxist theory, this fallacy arises because Marx treated classes or, somewhat broader, groups as entities which act and decide the way individual persons do. Hence, whenever a certain class or group feels oppressed and, at the same time, finds itself strong enough to defeat its oppressor it will go for a fight and take over political power. The fundamental error which is implied in this view is that groups are no entities but are rather subject to complex mechanisms of collective action. Group behavior is thus fundamentally different from individual behavior, since group behavior is the result of an intricate interaction of the individual behavior of group members. As a result, groups or, for that matter, classes may act in the interest of its members, however defined; but they may as

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<sup>1</sup> A somewhat more modern approach is the theory of relative deprivation; see *Bloch*, 1986, and the criticism in *Kuran*, 1989: 56 – 58.

<sup>2</sup> An illustrative example is this: Humans eyes cannot see atoms. Human beings are composed of atoms. Hence, humans eyes cannot see human beings.

well act in a way which is opposed to the interest of even each individual member of the respective group. The fact that some action may be in the interest of a certain group is thus not a sufficient and possibly not even a necessary condition for the group to exhibit a behavior which supports that interest (*Olson*, 1965).

*Tullock* (1971; 1987) has applied the logic of collective action to revolutions and argued that revolutions cannot adequately be explained by the public goods they may supply to an oppressed citizenship. The implications of this finding are far reaching. While we do observe revolutions and political instability, we do not have a theory which consistently relates political deficiencies such as severe income or wealth inequalities to political uprisings.

Recently, *Acemoglu* and *Robinson* (*AR* in what follows) have published a number of papers as well as a book in which they aim at reestablishing the relation between income or wealth inequality between a rich ruling class and a poor citizenship on the one hand and revolutionary attempts on the other. As these authors are in the modern political-economy tradition, they provide a considerable formal underpinning of their approach both theoretically and empirically. Seemingly, they realized what *Marx* and others failed to do, namely to construct a theory which meets the requirements of modern methodology but, at the same time, provides the long desired link between unjust behavior of governments and revolutions as a response from an oppressed people.

In this paper, however, we will argue that this is indeed only seemingly so. We will try to demonstrate that despite the application of modern game theoretical tools, *AR* base their reasoning on the same erroneous assumption as most of the previous authors who sought to relate oppression to revolution. In particular, *AR* neglect the problem of collective action but they hide this in the construction of their model. We will demonstrate that income inequality is not a sufficient and not even a necessary condition for a revolution. We will talk about a revolution potential when there is a certain subgroup of a society for which it is, as a group, beneficial to launch a revolution. We will demonstrate that the existence of a revolution

potential does not depend on the income distribution. If, however, there is such a potential, then the question as to whether a revolution actually occurs hinges upon a rather intricate structure of commitment problems between subgroups of the society.

The paper is organized as follows. In the next section we present a simple version of *AR*'s model and then develop our central argument. In section three we demonstrate that income inequality is not a sufficient condition for a revolution as long as the revolutionaries have no effective commitment devices. In section four we show that the existence of revolution potentials is not even conditional on income or wealth inequality. We argue that, under these conditions, the structure of potential commitment devices rather than the pure existence of income or wealth inequality is decisive for explaining revolutions. In the last section, we conclude and generalize of our results.

## *2. Modeling a Revolution: The AR-Approach*

*AR* introduced and refined their approach in a number of papers, mainly in *AR* (2000; 2001; 2002). Related work can be found in *AR* (2000a; 2001a; 2003). Our presentation leans, for the most part, on their book of 2006 (*AR*, 2006). Although there they present the most stripped-down version of their approach, this version is still built on the same critical assumptions as any of the more refined ones. Hence the latter are no less subject to the fundamental specification problem of *AR*'s model than the book version and thus bear precisely the same potential for misconclusions. Consequently, our criticism applies to all the variants of *AR*'s approach as they have been published both in the book and in the above cited papers.

To start with, there are two income groups in our society: a relatively small and rich group  $r$  as well as a relatively large and poor group  $p$ . We define  $\delta$  as the share of the rich and  $(1-\delta)$  as the share of the poor people in the population, with  $\delta < 0.5$ . We assume a dictatorship in

which the government is a perfect agent of group  $r$ . Per-capita income<sup>3</sup> is defined as  $y^i$  with  $i \in (r, p)$ , and average income  $\bar{y}$ . Within each group, per-capita income is equally distributed, but not so across groups. We define  $\theta$  as the share in total income of the rich and  $(1 - \theta)$  as the share in total income of the poor. The size of the total population is normalized to unity. Then, income of the poor and the rich is:

$$y^p = \frac{(1-\theta) \cdot \bar{y}}{1-\delta} \quad \text{and} \quad y^r = \frac{\theta \cdot \bar{y}}{\delta}, \quad \text{respectively.} \quad (1)$$

For obvious reasons, we assume that  $y^r > \bar{y} > y^p$ , so that:

$$\frac{\theta \cdot \bar{y}}{\delta} > \frac{(1-\theta) \cdot \bar{y}}{1-\delta} \quad \text{and hence} \quad \theta > \delta, \quad (2)$$

which simply says that the income share of the rich always exceeds their share in population. As in *AR*, we focus on distributional conflicts. To that end, we assume that the government chooses a tax rate  $\tau$  on income and redistributes tax revenue  $T$  back to the population on a lump-sum basis. Different from *AR* we abstract from deadweight losses, so that tax revenue per capita available for redistribution is simply  $T = \tau \cdot \bar{y}$ . The tax system is thus a pure redistribution device which shifts income from the rich to the poor, where the tax rate measures the extent to which income is redistributed. Each member of the population maximizes utility for any given income level and tax rate. Indirect utility can therefore be written as:

$$V^i(y^i | \tau) = y^i - \tau \cdot (y^i - \bar{y}). \quad (3)$$

For the rich (poor), the term in brackets is above (below) zero so that they can reach the highest level of utility at  $\tau = 0$  ( $\tau = 1$ ). As the government is assumed to be a perfect agent

<sup>3</sup> One may view  $y^i$  as individual wealth rather than income, if one finds that more convincing with respect to questions of inequality.

of the rich, it would choose a tax rate of  $\tau = 0$  unless there is some restriction on the government's power to do so. The poor represent a potential threat to the rich since they may overthrow the government and seize the income of the rich. As long as, for whatever reasons,  $r$  and  $p$  are considered to be homogenous blocks of decision making, the only restriction on the richs' power stems from the poor. Again as in *AR*, we recognize some costs of a revolution by assuming that a part of the real-capital stock of the respective country will be destroyed during revolution. In that sense the level of average income is reduced by a factor  $\mu$  with  $0 \leq \mu \leq 1$  and the post-revolution average income drops from  $\bar{y}$  to  $(1 - \mu) \cdot \bar{y}$ . The poor choose a strategy  $P \in (R, N)$ , where  $R$  is "revolution" and  $N$  "non-revolution". For simplicity, it is assumed that when  $P=R$ , the poor seize all income of the rich and distribute it among themselves. Also, if a revolution occurs it will always be successful. Then, indirect utility of the poor in the aftermath of a revolution can be written as:

$$V^p(R, \mu) = \frac{(1-\mu) \cdot \bar{y}}{1-\delta}. \quad (5)$$

By contrast, when the poor unconditionally abstain from revolution and leave unrestricted power to the rich, then the latter set their most preferred tax rate  $\tau^r = 0$ . In this case, indirect utility of the poor will be:

$$V^p(y^p | \tau^r = 0) = y^p, \quad (6)$$

or, since according to (1),  $y^p = (1 - \theta) \cdot \bar{y} / (1 - \delta)$ :

$$V^p(y^p | \tau^r = 0) = \frac{(1-\theta) \cdot \bar{y}}{1-\delta}. \quad (7)$$

If post-revolution income of the poor exceeds the pre-revolution income, indirect utility in (5) is higher than that in (7):

$$\frac{(1-\mu) \cdot \bar{y}}{1-\delta} > \frac{(1-\theta) \cdot \bar{y}}{1-\delta} \quad \text{or simply:} \quad \theta > \mu. \quad (8)$$

*AR* call this the revolution constraint. For reasons explained below, we prefer the term revolution potential. Whenever (8) holds, the poor as a group have a potential for gaining income by way of overthrowing the government and dividing the income of the rich among themselves. The rich, in turn, choose a strategy  $\tau \in (\hat{\tau}, 0)$ . They may simply set a tax rate of zero if they do not want to redistribute income to the poor. By contrast, if they want to dissolve a revolution potential, they may choose a “critical” tax rate  $\hat{\tau}$  which is just high enough to raise after-tax income of the poor to a level as high as what is given by equation (5). This critical tax rate can be found by setting (3) equal to (5) and solving for the tax rate. It is:

$$\hat{\tau} = \frac{(1-\mu) \cdot \bar{y} - (1-\delta) \cdot y^p}{(\bar{y} - y^p) \cdot (1-\delta)}. \quad (8a)$$

If the tax rate is as high as, or higher than,  $\hat{\tau}$  the poor cannot gain any income by way of a revolution. *AR*’s basic idea is as follows (see *AR*, 2000: 1169-1177). As inequality rises there will be either a revolution or the government offers some long-lasting concessions in terms of income redistribution. In either case will the revolutionary groups dissolve after concessions have been made or after the government has been overthrown by way of a revolution.

The rest of the story can be formalized in a simple two-step game (see figure 1). In the first step, the poor decide on their strategy  $P=R$  or  $P=N$ , given that the rich promised  $\tau = \hat{\tau}$ . In the case of  $P=R$  a successful revolution will occur and the poor can keep all the income that has not fallen victim to destructions during the revolution. So following a revolution will per capita income per member of the poor be  $(1 - \mu) \cdot \bar{y} / (1 - \delta)$ . By contrast, the post-revolution income of the rich will be zero. In the case of  $P=N$ , there is a second step in which the revolutionary group dissolves and the rich choose their strategy  $\tau$ . The latter can now keep their promise and set  $\tau = \hat{\tau}$ , hence yielding an after-tax income of  $\hat{y}^p$  for the poor and leaving  $\hat{y}^r$  for themselves. However, given that the revolutionary group has already dissolved this is

not their best response to  $P=N$ , since they can maintain their higher-level after-tax income  $y^r$  by simply breaking their promise and setting  $\tau = 0$ .

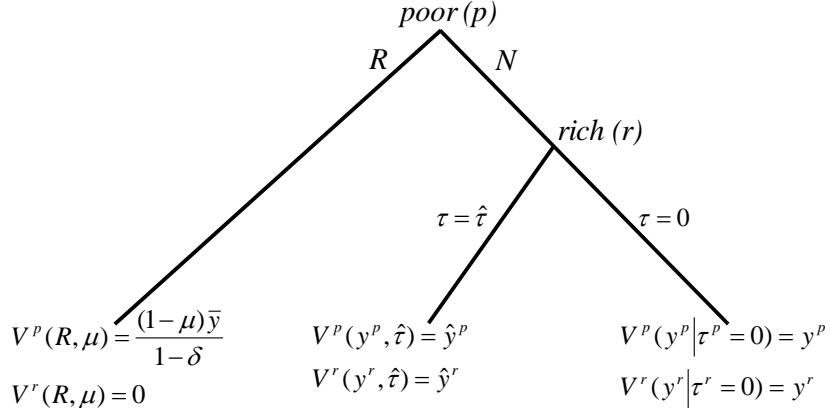


Figure 1: The government's commitment problem

Given rationality on the part of the poor, they would expect  $\tau = 0$  and choose  $R$  in step one. Hence  $R$  is the (subgame perfect) *Nash* equilibrium. The underlying commitment problem of the rich is at the heart of AR's entire approach. By help of the more sophisticated versions of this approach, they go as far as to derive conclusions on the basis of which they claim to explain no less than the rise of western democracies. For doing so, they introduce a second option of the government for calming down a revolutionary movement, namely introducing democracy. Since  $1 - \delta > 0.5$  the median voter will always be a poor person. So the government will have to decide whether democratization or pure redistribution to the poor by way of  $\tau = \hat{\tau}$  is a best response to a revolutionary threat. As far as the introduction of democracy is an irreversible step for the government it can serve as a commitment device and thus as a solution to the time-inconsistency problem involved in the game presented in figure 1 (see AR, 2000). Hence, under certain conditions, the government may choose to democratize the government and respect the median-voter's will in the future instead of simply redistributing some income. This even applies in the case where the median voter can be expected to redistribute more than is associated with the tax rate  $\tau = \hat{\tau}$ . Whether or not democratization instead of  $\tau = \hat{\tau}$  is the best response by the government critically depends on

the speed by which the revolutionary group disorganizes in the aftermath of a calmed-down revolutionary threat.

In such a way *AR* develop their explanation of the rise of western democracies. The whole reasoning is derived from some sophistications of the basic commitment problem as presented above. However, these sophistications are not of interest here. This is so since we want to focus on the fundamental specification problem of their model which implies the underlying commitment problem which is already incorporated in the most simplified version.

Indeed, the core of *AR*'s reasoning seems to make perfect sense at first glance. The crucial condition for *AR*'s reasoning is condition (8), which says that whenever the post-revolution income of the poor exceeds the non-revolution after-tax income of the poor, there will be a revolution potential. There is hence scope for a revolution in the sense that the poor as a group can raise their income by way of a revolution. Condition (8) does not say, however, that there *will* be a revolution whenever this condition holds. Predicting a revolution on the basis of condition (8) alone would imply to say that groups will launch a revolution whenever it is beneficial for the group to do so. The trouble with such an inference is not that it sounds tautological (which it is indeed not) but rather that it shortcuts the core problem of a revolution much like all other types of collective action, namely the free-rider problem.

*AR* are well aware of the collective-action problems involved. However, since they are not interested in these questions, they circumvent them, even though it seems that they take them serious. The latter, however, is only true for the book version, where they define a subgroup  $\xi$  with  $\xi \leq (1 - \delta)$  of the poor population which participates in a revolution, as well as a minimum share  $\xi^p$  which is necessary for a revolution to be successful. Furthermore, they define individual costs of participation  $\varepsilon \cdot \bar{y}$  with  $0 < \varepsilon < 1$ . Given these definitions and according to (5), individual income after a revolution would be  $((1 - \mu) \cdot \bar{y} / (1 - \delta)) - \varepsilon \cdot \bar{y}$  for poor participants and  $(1 - \mu) \cdot \bar{y} / (1 - \delta)$  for poor non-participants. Hence the participants

would have to bear the costs whereas the improved income position can be enjoyed by both participants and non participants alike.

One possible strategy for overcoming the free-rider problem presented by AR is to share the benefits of a revolution only among participants. When no more than just the necessary share of the poor people participates in the revolution, income gain of participants will be:

$$\frac{(1-\mu) \cdot \delta \cdot y^r}{\xi^p} - \varepsilon \cdot \bar{y}. \quad (9)$$

A revolution potential will arise if:

$$\frac{(1-\mu) \cdot \delta \cdot y^r}{\xi^p} > \varepsilon \cdot \bar{y}. \quad (10)$$

Condition (10) is a modified version of what AR call the revolution constraint (8). It indeed defines a potential net gain of *individual* participation in a revolution. If condition (10) holds for as many as  $\xi^p$  persons, there is thus an incentive for an individual person to participate. Naturally, this is not necessarily the case, and there may be situations where condition (10) is not even feasible. See figure 2A for an illustration. If the necessary share  $\xi_1^p$  is comparatively low, then the net gain for each revolutionary will be relatively large, for example  $\Delta_1$  in figure 2A. The higher the necessary share  $\xi_1^p$ , though, the smaller will be the income gain. At  $\xi_2^p$  in figure 2A, the net gain will even be negative at  $\Delta_2 < 0$ . Generally, a revolution is not feasible whenever  $\xi^p > \xi_c^p$ , hence we call  $\xi_c^p$  the critical value of  $\xi^p$ .

The feasibility criterion implies that revolutions are only possible when a relatively small fraction of the population is sufficient for a revolution to be successful. By the same token, revolutions would only be able to benefit exactly that relatively small fraction of the poor. Anecdotal evidence suggests that revolutions which benefit but a small fraction of the population are not completely uncommon, to say the least. Another issue is that, for any sufficient fraction  $\xi^p$ , there is still a coordination problem among the participants to be solved

in order for a revolution to go ahead. AR do not elaborate on that issues, too, but simply “presume that the group is somehow able to solve the coordination problem” (AR, 2006: 125; see also AR, 2000: 1172).

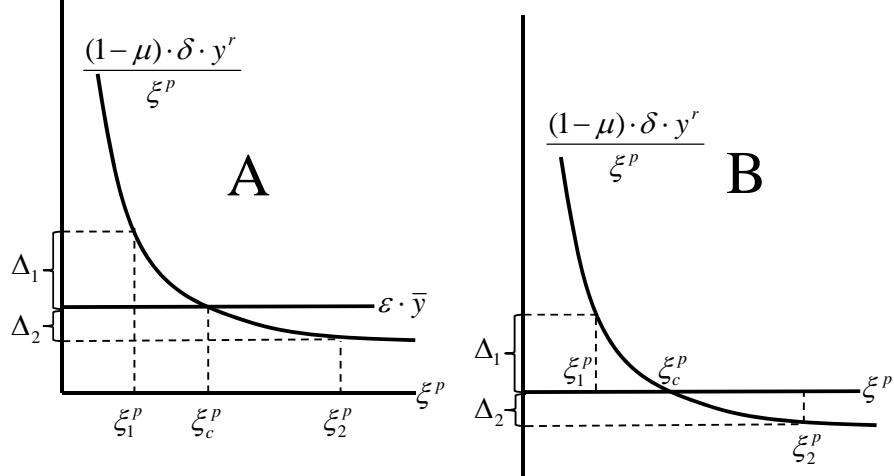


Figure 2: Feasibility of a Revolution

The most critical point, however, is the following. AR merge the individual costs  $\varepsilon \cdot \bar{y}$  of participating in a revolution into the general costs  $\mu$  of a revolution. In so doing, they finally get rid of all sorts of collective-action problems. The following procedure does the trick: A change in individual costs  $\varepsilon \cdot \bar{y}$  has the same effect on the critical value  $\xi_c^p$  as a change in  $\mu$ . Hence, merging  $\varepsilon \cdot \bar{y}$  into  $\mu$  does formally not change anything, except that  $\varepsilon \cdot \bar{y}$  becomes invisible. The latter can be seen in figure 2B. In contrast to figure 2A,  $\varepsilon \cdot \bar{y}$  in figure 2B are part of  $\mu$  and not separately visible anymore. Instead, they raise  $\mu$  so that the  $(1 - \mu) \cdot \delta \cdot y^r / \xi^p$ -curve shifts downwards and intersects the horizontal axis at  $\xi_c^p$ .

On the surface, this is uncritical. The problem, however, is that collective-action issues are faded out. This is obviously what AR aim at, since they want to focus on aspects different from the organization of collective action within the group of the poor, namely those presented in figure 1. However, doing so comes at a cost. The reason is that it directly leads back to condition (8) which shows the conditions under which it pays for a group  $p$  to launch a revolution. Whereas this is what AR focus on, the problem is that condition (8) defines, if

any, a necessary condition for revolutions. Hence, claiming that a revolution will occur, or only that a revolution is more probable, whenever this condition holds, is misleading. Formally, this materializes in the fact that condition (8) was initially derived with respect to the entire poor part  $1 - \delta$  of the population. Alternatively, when we assume that the benefits of a revolution are distributed to the active revolutionaries alone, then condition (8) relates to only the subset  $\xi$  of the poor.

So the game changes from the original one, with  $\delta$  rich players and  $1-\delta$  poor players, to a modified game with  $\delta$  rich players and  $\xi$  revolutionaries. We will see that this is more than just a change in numbers. Especially in *AR* (2001; 2002), they claim that a sufficiently strong rise in inequality between the rich and the poor makes it profitable for a poor to participate in a revolution. They can do so because they do not distinguish between the poor in general and the poor as revolutionaries, even though in *AR* (2006) and very briefly in (2001) they mention a way one could, in principle, do so. In their further analysis, however, they do not. Hence, the poor *are* the revolutionaries whenever condition (8) holds. Appreciating, however, that the revolutionaries are only a subset of the poor changes the very meaning of this condition. It then says that a revolution can become profitable to an individual revolutionary whenever there is enough income of the rich available for being distributed to the individual participants (and not to the entire poor population) after a revolution. What is more, if we allow for revolutionaries who have never been a subset of the poor population (*Castro, Hoxha, Lenin, Trotzki*, to mention a few), the condition changes such that both the necessary and the sufficient condition for a revolution get completely detached from the income position of *any* subgroup of the poor.

In proceeding that way, *AR* also circumvent what *Gordon Tullock* presumably had in mind when he published his seminal paper on the economic theory of revolutions (*Tullock*, 1971; 1987: 53 – 78; see also *Buchanan*, 1979). He pointed to the collective-good character of a revolution and concluded that the history of mankind provides few, if any, real popular

uprisings which resulted from oppression and inequality. This was an application of *Olson's* (1965) verdict on the old analytical shortcut which claimed that a group acts collectively because it is in the interests of the group to do so. We know since *Olson* that the fact that something is in the interest of a group as a whole is not a sufficient and sometimes not even a necessary condition for them to take action. Some other subgroups of the population might act without having ever been oppressed or deprived simply because they happen to be able to solve the collective-action problem. These subgroups are usually small and tentatively elitist groups. Taking this reasoning serious implies that revolutions do occur because the individually participating revolutionaries benefit from them, but they do not occur because there is a public good (in terms of a better government) to be supplied (*Congleton*, forthcoming: 151-155; *Kuran*, 1989, *Weingast*, 2006).

This last aspect, which has been troubling the explanation of revolutions for at least the last decades, has simply been wiped out in the *AR*-approach, and intentionally so. *AR* even proceed a step further and leave it open as to how “the poor” solve the collective action problem. Only in the book do they compare the option to restrict the distribution of revolution benefits to participants alone with some other options from which one can choose in order to overcome free-rider problems. Further on, though, *AR* ignore the problem altogether. Instead, they simply assume that the poor will, sooner or later, choose one of these options and thus find a way for solving the free-rider problem of collective action whenever condition (8) holds. This becomes obvious when, after having discussed some aspects of the issues at hand, they finally write (*AR*, 2006: 128): “Let us now put the collective-action problem aside and start investigating the implications of the revolution constraint.” While it is certainly legitimate to fade out aspects one do not want to focus on, it can lead to wrong conclusions when the faded-out aspects affect the results of what has been focused on.

In the next section, we will show that, within the *AR*-setting but under due consideration of the free-rider problem of collective action, (8) is not a sufficient condition for a revolution.

We will then show that, under some realistic modifications of the *AR* setting, (8) is not even a necessary condition. Taken together, we can claim that it is even wrong to say that a revolution is conditional on what *AR* call the revolution constraint in any way.

### *3. Reintroducing Collective Action*

While there may be a more comprehensive group of participants in a broader sense, revolutions are typically organized by a core of “leader revolutionaries” who solve the collective-action problems involved in revolutions. This may, but does not need to be, a subgroup of the poor majority. In the following, we will call this group the revolutionary elite of the poor (*pe*). The members of the revolutionary elite usually claim to be the legitimate representatives of all oppressed poor, for reasons of ideology or of pure opportunism, or sometimes because the poor do indeed believe to be well represented by the revolutionary elite. The revolutionary elite must be relatively small in order to retain its capacity for effective decision making and in order to keep free riding within their group in check. We define the number of people belonging to the revolutionary elite as  $\gamma \cdot \xi$  with  $0 \leq \gamma \leq 1$ . Those people who are not members of the revolutionary elite but who may nevertheless participate in revolutionary activities are called the revolutionary crowd of the poor (*pc*). There are  $(1 - \gamma) \cdot \xi$  members of this group. Whether or not they decide to actually take part in a revolution depends on whether they expect personal net benefits from doing so. Finally, there are poor people who do not participate in revolutionary activities but rather remain passive. This is the group of the non-active poor (*pn*), consisting of  $1 - \xi$  members.<sup>4</sup>

If the revolutionary crowd *pc* decides to participate in a revolution, it supports the revolutionary elite *pe* by way of public demonstrations, strikes and other mass events, but also by undermining decisive structures like the army, the police, the public administration, or the

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<sup>4</sup> They may be inactive by their own choice or because they had not been accepted as members of *pe* or *pc*.

media. However, the revolutionary activities are coordinated by the revolutionary elite. Hence, while the people in  $pc$  are active participants in a revolution, they do not have access to the decision making processes. The latter is the capacity of  $pe$  who determine, from their point of view, the size of the  $pc$  group, whom to acquire as a member of  $pc$  or  $pe$ , how to reward participants for their efforts and for the risks they take, and so on. As in the previous section, we define the minimum size of  $pc$  for a success in a revolution as  $\xi^p$ . We assume that the  $pe$  group promises to share the income seized from the rich equally among all  $pc$  and  $pe$  people. In doing so, they acquire not-yet-active poor people as members of  $pc$  and, at the same time, they solve potential free-rider problems within the  $pc$  group.

Note that the elites' promise to share the benefit of revolution with the people in  $pc$  may not be credible. The necessary condition for this promise to be credible is that condition (10) holds for at least  $\xi^p$  members of the poor population. Take a second look at figure 2 for that matter. As long as  $\xi^p < \xi_c^p$ , the per-capita benefit of a revolution  $(1 - \mu)\delta \cdot y^r / \xi^p$  exceeds the per-capita cost  $\varepsilon \cdot \bar{y}$  of participating in a revolution, so that each participant in  $\xi^p$  can gain income. In the case of  $\xi^p \geq \xi_c^p$ , however, there must be losers at least as soon as there is only one person who enjoys a net gain. Given full information of the  $pc$  members, any promise of a net gain in income is not credible then.

In the latter case, the only way for the revolutionary elite to acquire as many as  $\xi^p$  poor people for  $pc$  is to break the promise, which is of course only possible in the case of asymmetric information. Hence, the more participants are needed for a successful revolution or, put differently, the higher the minimum number of participants, the less likely is a revolution to happen. Moreover, should it happen anyway, it is impossible that the members of the revolutionary crowd benefit from their participation, since the revolutionary elite is simply not able to keep its promise.

The purpose of this section, however, is to show that even if condition (10) holds, a revolution may never happen since (10) is, at best, a necessary but not a sufficient condition for a revolution. This point can be made clear by help of another simple two-step game (see figure 3).

In the first step, the members of the revolutionary crowd decide on their strategy  $P \in (R, N)$ . The second step depends on what the revolutionary crowd had chosen in step 1. In the case of  $N$ , the rich will have to choose among  $\tau = \hat{\tau}$  or  $\tau = 0$ . After-tax income of the rich and the poor will then settle at  $\hat{y}^p > y^p$  and  $\hat{y}^r < y^r$ , so that there is an income redistribution from the rich to the poor just sufficient to make a revolution unprofitable for the revolutionary crowd. In the case of  $\tau = 0$ , however, income of the rich and all subgroups of the poor remain at their pre-tax levels  $y^r$  and  $y^p$ , respectively.

Alternatively, if the revolutionary crowd had chosen  $R$  in the first step, the revolutionary elite has to choose a strategy  $D \in (E, U)$  and thus to decide on how the seized income of the rich will be distributed. Here,  $E$  means that the members of the elite stick with their promise and equally share the seized income among all revolutionaries, independently of whether they are members of  $pc$  or of  $pe$ . By contrast,  $U$  means that they break their promise and distribute the seized income among members of the revolutionary elite alone.

The setting implies that the revolutionary crowd will have to build expectations on the decisions (potentially) taken by both the revolutionary elite and the rich. As in the last section, it is clear that the rich have a commitment problem since they would have an incentive to choose  $\tau = 0$  as soon as the revolutionary crowd fails to go for a revolution and choose  $N$  instead. At the same time, however, they have to realize that the revolutionary elite faces a similar commitment problem. Should the revolutionary crowd choose  $R$ , then the best response of the revolutionary elite is  $U$ , meaning that they distribute the income seized from

the rich among themselves alone.<sup>5</sup> As a result, the revolutionary crowd would have to expect defective behavior of both the rich and the revolutionary crowd. They can thus find their best response by comparing the results of  $\tau = 0$  on the one hand and  $U$  on the other. Since  $y^p > (1 - \mu)y^p - \varepsilon \cdot \bar{y}$  the subgame perfect equilibrium is  $(N, \tau = 0)$ .

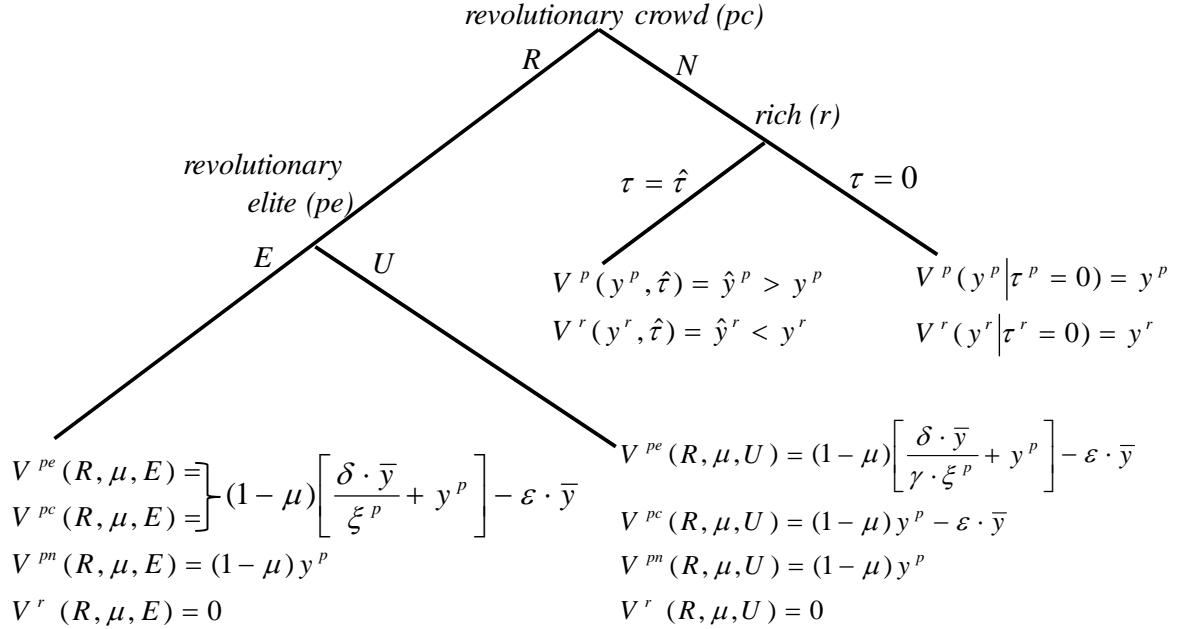


Figure 3: The commitment problem of the revolutionary elite

As a result, as long as the revolutionary elite cannot credibly commit to  $E$ , there will be no revolution, no matter how unequal the income distribution is. Moreover, as long as this is the case, the commitment problem of the rich is simply irrelevant. Hence, different from what AR claim, condition (8) is *not* a revolution constraint, at least not as long as the sufficient condition does not hold. The sufficient condition, in turn, is that members of the revolutionary elite must be able to credibly commit themselves to their promise, namely to equally share the benefits of revolution with the revolutionary crowd. The deeper reason for why AR are (seemingly) able to explain revolutions simply by income inequality while we have reached to precisely opposite results is that AR define away problems of collective action. As argued

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<sup>5</sup> This is, if you like, a formalized version of George Orwell's famous *Animal Farm* fable.

above one may well abstract from details which do not change the result of what one focuses on. If, however, such result is dependent on the faded out detail, then the abstraction leads to misconclusions. The latter is obviously the case in *AR*'s approach.

It is not the extent of income inequality between the rich and the poor which is behind a revolution, although in the present (*AR*-)setting (but not in that of the following section) income inequality is necessary for a revolution. What really counts is whether or not some revolutionary elite arises at all which takes responsibility for solving the collective-action problem; and then the point is whether or not the revolutionary elite can credibly commit itself to sharing the benefits of the revolution with the rest of those who actively contributed to its success. Note that our setting is perfectly equivalent to that of *AR*, except that we take the collective-action problem into account.

At this point, one may argue that income differences still count, so that income inequality is still a decisive factor for explaining revolutions. True, if condition (10) does not hold, then the necessary condition does not apply either, and there will be no revolution. So if, like *AR*, one is rather optimistic in a sense that sooner or later a group will somehow manage to solve collective-action problems if only it pays to do so, then one may still find it legitimate to analyze revolutions on the basis of the necessary condition (10) alone. It would hence still be arguable whether *AR*'s optimism is justifiable or not. However, once we recognize that the revolutionary elite does by no means need to stem from the oppressed poor part of the population, it becomes clear that income differences are not even a necessary condition for a revolution. This is what the next section deals with.

#### *4. Revolutions without inequality*

In this section, we deal with revolutions which occur even without gross inequality. The lowest level of per-capita income inequality between the groups, of course, is zero inequality. So that is what we assume: per-capita income in  $r$  and  $p$  is fully equal, so that  $y^r = \bar{y} = y^p$ .

Remembering that income of group  $p$  members is  $(1 - \theta) \cdot \bar{y}/(1 - \delta)$  and that of group  $r$  members is  $\theta \cdot \bar{y}/\delta$ , then equal per-capita income is given at  $\theta = \delta$ .

Although there are no income differences anymore, we maintain the distinction between  $r$  and  $p$ , since there is still the question of who has political power. We continue to assume that it is the members of  $r$  who hold political power although that does by assumption not translate into higher per-capita income of group  $r$  as compared to group  $p$ . Next, we assume that the revolutionary elite is not a subgroup  $\gamma \cdot \xi$  of  $p$  but a subgroup  $\gamma \cdot \delta$  of  $r$  instead.<sup>6</sup> Consequently, we call them the group of the revolutionary elite of the “rich”  $re$  instead of  $pe$  in this section, while  $rn$  are the non-revolutionaries among the members of group  $r$ . For simplicity, we assume that the government stems from, and is a perfect agent of,  $rn$ . Finally, as was the case in the previous section,  $pn$  are the  $1 - \xi$  non-active members of group  $p$ .

We assume the number  $\gamma \cdot \delta$  of the revolutionary elite to be fixed. However, this number may fall short of the minimum number of participants in a revolution, which we define as  $\varphi^p = \xi^p + \gamma \cdot \delta$  with  $\gamma \cdot \delta < \varphi^p$  in this section. The  $re$ -people thus hire  $\xi^p$  additional revolutionary activists from group  $p$ . At the same time, however, they keep these  $pc$ -people away from all kinds of leadership in the revolution. Once again,  $re$ -people acquire  $pc$ -people by promising to share the benefits of revolution with them. As far as they keep their promise, all income of group  $r$ , i.e.  $(1 - \mu)\delta \cdot y^r$ , plus the income of the revolutionary crowd  $\xi^p \cdot y^p$

<sup>6</sup> This kind of a revolutionary elite is similar to what *Besley* and *Kudamatsu* (2008) called a *selectorate*. In their approach the selectorate is, like in *AR*, able to oust the incumbent government alone. In a specific case, the selectorate may be interested in a government which happens to serve the interest of a more general public as well. *Besley* and *Case* call this the case of a “successful autocracy” because the revolution constraint forces the government not only to promote the interest of the revolutionary elite but, as a byproduct, the interest of a broader public as well. Note, however, that there is no mechanism which systematically relates the interest of the revolutionary elite to that of a broader public. Hence, *Besley* and *Kudamatsu* do not claim the existence of any tendency for autocracies to become “successful” in their sense.

will be shared by the  $\gamma \cdot \delta$  members of the revolutionary elite plus the  $\xi^p$  members of the revolutionary crowd. Post-revolution income of a revolutionary in the case of equal sharing would then be:

$$(1 - \mu) \frac{\delta \cdot y^r + \xi^p \cdot y^p}{\gamma \cdot \delta + \xi^p} - \varepsilon \cdot \bar{y} \quad \text{or, since } y^r = \bar{y} = y^p \quad \left[ \frac{(1-\mu)(\delta+\xi^p)}{\gamma \cdot \delta + \xi^p} - \varepsilon \right] \bar{y}. \quad (11)$$

The condition for a net benefit (or at least no loss) for all  $\gamma \cdot \delta + \xi^p$  participants in the case of equal sharing of the benefits is that post-revolution per-capita income will be above pre-revolution per-capita income:

$$\left[ \frac{(1-\mu)(\delta+\xi^p)}{\gamma \cdot \delta + \xi^p} - \varepsilon \right] \bar{y} \geq \bar{y}, \text{ or} \quad \frac{(1-\mu)(\delta+\xi^p)}{\gamma \cdot \delta + \xi^p} \geq 1 + \varepsilon. \quad (12)$$

The first derivative of the left-hand side with respect to  $\xi^p$  of (12) is

$$(\gamma - 1) \frac{(1-\mu)\delta}{(\gamma \cdot \delta + \xi^p)^2} < 0, \quad (13)$$

so that the left-hand side is decreasing in  $\xi^p$  and we can, as illustrated in figure 2, find a critical number  $\xi_c^p$  of participants from group  $p$  for which the net income gain of a revolution is zero.

Whenever (12) holds in the case of equal sharing, there is a potential for a net benefit for each participant, where some participants stem from  $r$  and some from  $p$ . Following the *AR*-logic, one would want to call (12) a “revolution constraint”. In this sense one would have to expect revolutions whenever (12) holds. We can generalize the necessary conditions (8) or (12), respectively, in the following way: A revolution potential is given whenever there is a group which is big enough in order to successfully revolt against the incumbent government and which can expect a personal net (income) benefit for each of its members from doing so. Note that for this condition to hold, no income inequality is necessary.

As in the previous section, the government may want to melt down the revolution potential by offering after-tax income improvements to potential revolutionaries. Given that all  $pe$  and  $pc$  members represent a revolution threat, the government can raise a tax and then somehow benefit the potential revolutionaries by the tax revenues. We can model this similar to the scheme in the previous section. So, let us again assume a proportional income tax  $\tau \cdot \bar{y}$ . Different from what we did before, however, the revenue is assumed to be distributed equally only to the potential revolutionaries here, i.e. to  $\varphi^p = \xi^p + \gamma \cdot \delta$  people (see *Olson/McGuire*, 1996; *Wintrobe*, 1998: 145-162). After-tax income of a potential revolutionary would thus be:

$$\left[ (1 - \tau) + \frac{\tau}{\varphi^p} \right] \bar{y}. \quad (14)$$

The critical tax rate  $\hat{\tau}$  which equalizes after-tax income of a potential revolutionary to the post-revolution income can then be found by setting (14) equal to (11) and solving for  $\hat{\tau}$ :

$$\hat{\tau} = \frac{(1 - \mu)(\delta + \xi^p) - \varphi^p - \varepsilon \cdot \varphi^p}{1 - \varphi^p}. \quad (15)$$

Note that in a limiting case, where there are no personal costs of participation and no destructions resulting from revolution, we would have  $\mu = \varepsilon = 0$  and (15) would simplify to:

$$\hat{\tau} = \frac{\delta + \xi^p - \varphi^p}{1 - \varphi^p}. \quad (15a)$$

Condition (15a) implies a 100 percent tax rate on all  $(1 - \gamma)\delta$  members of group  $r$  who do not belong to the revolutionary elite. The power of the “ruling class” thus rests on the personal costs  $\varepsilon$  which those people face who may violently remove the incumbents from office as well as on the potential destruction  $\mu$  of the productive base of the country. If we would apply AR’s logic alone, then the ruling class may be able to reduce the tax rate on its own income to a level below 100 percent only proportional to a rise in  $\varepsilon$  and  $\mu$ . As argued above, however,

there is more to a revolution threat than this, and the reason is again that all potential revolutionaries have to solve a collective action problem.

The collective-action problem involved here is not different from that in a world with income inequality (see figure 4). In the first step, the revolutionary crowd decides on a strategy  $P \in (R, N)$ . Depending on whether they choose  $R$  or  $N$ , the revolutionary elite has to choose among  $E$  and  $U$  or the government has to decide whether to set  $\tau = \hat{\tau}$  or  $\tau = 0$ .

If the revolutionary crowd chooses  $R$ , then the revolutionary elite has to decide as to whether they keep their promise and equally share the benefits of the revolution. If they did

so, their income would, according to (11), rise from  $\bar{y}$  to  $\left( \left( \frac{(1-\mu)(\delta+\xi^p)}{\gamma} \cdot \delta + \xi^p \right) - \varepsilon \right) \bar{y}$ .

However, by breaking their promise, they can raise their income still further, namely to:

$$\frac{(1-\mu)\cdot\delta\cdot y^r}{\gamma\cdot\delta} - \varepsilon \cdot \bar{y} \Leftrightarrow \left[ \frac{1-\mu}{\gamma} - \varepsilon \right] \bar{y}. \quad (16)$$

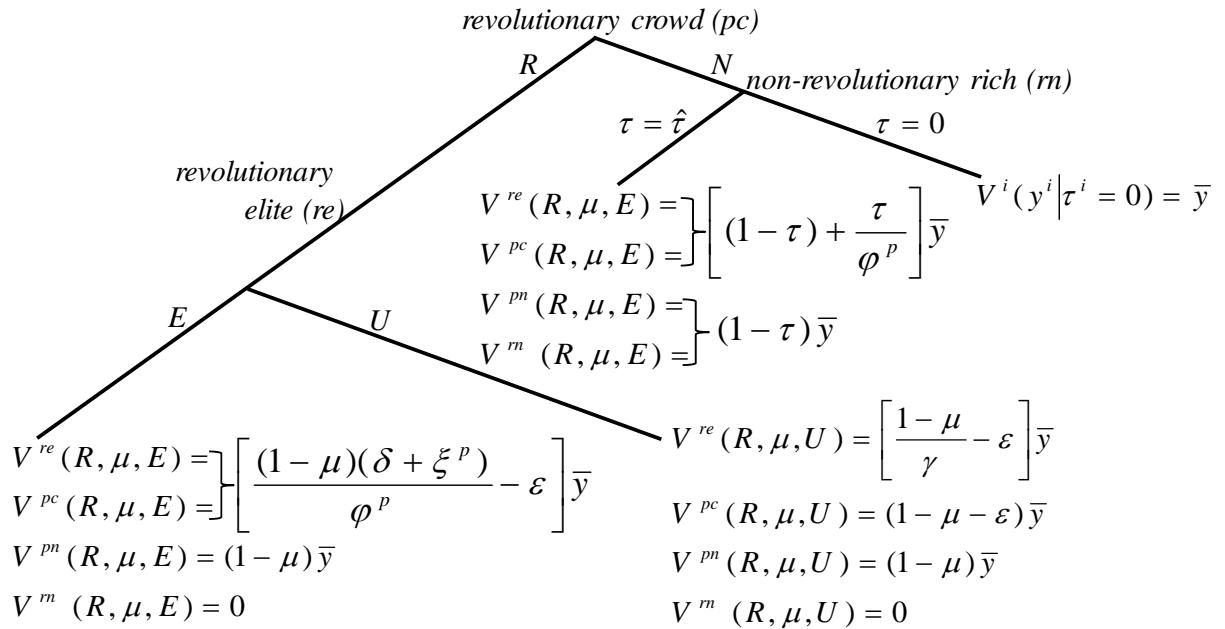


Figure 4: Revolution with no inequality

If  $pc$  choose  $N$ , then the best response by the non-revolutionary rich  $rn$  were to set  $\tau = 0$  since it is clear that  $\bar{y} > (1 - \tau)\bar{y}$ . Anticipating that both  $rn$  and  $re$  cannot commit to their

promises, the revolutionary crowd has to compare the respective payoffs in the cases of  $\tau = 0$  and  $U$ . Since  $\bar{y} > (1 - \mu - \varepsilon)\bar{y}$ ,  $N$  is the best response to the anticipated choices by *re* and *rn*.

As a result, whether there is income inequality or not in a society is not a decisive condition for revolutions to occur. What is needed is a revolution potential, and such a potential can be given in any case. It is even possible that there is a revolution potential for a group which is privileged in terms of income or wealth as compared to a majority of the population. One may well go as far as to claim that there are revolution potentials of all sorts in any society and at any time. Moreover, once a revolution has changed the structure of political power, income, or wealth to the advantage of some group, this structure will almost certainly give scope for a new revolution potential to still some other groups. If each of these ever arising revolution potentials were sufficient for an actual revolution to occur, there would be a never ending series of revolutions in practically each society. The reason is that there will practically never be any equilibrium in the sense of a certain assignment of power, wealth, and income which does not give rise to any revolution potential for any group in a society.

The latter is indeed a variant of *Condorcet's* voting paradox with the only difference that, in the absence of collective-action problems, a quota  $\xi^p$  for which (12) holds rather than a majority are both necessary and sufficient in order to overturn an existent assignment of income or wealth positions. Since decisions on such assignments are usually not single peaked, there will be no equilibrium. In analogy to *Condorcet's* voting cycle we may talk about a *revolution cycle* here.

In the early 1980s, *Usher* (1981) argued that a stable democracy presupposes the assignment of income and wealth positions to be removed from public decision making and left to some more or less automatic mechanism, such as market forces. The reason, in brief, was the voting cycles. This, then, requires some more general consensus in a society for such automatic mechanisms to remain untouched by collective decisions. These mechanisms may be enforced by constitutional rules. Following *Usher*, these rules are a prerequisite to political

stability in a democracy. Turning back to a dictatorship, then, raises the question as to what it is that may secure political stability here, given that the non-single peaked decisions on the assignment of income and wealth positions imply what we have called revolution cycles in analogy to voting cycles? It can certainly not be constitutionally protected assignment systems since dictatorships usually do not have reasonably functioning constitutions; and revolutions, by their very nature, aim at changing the assignment system of income and wealth positions.

Our analysis suggests that the substitute for the stabilizing constitutional rules in democracies is the costs of revolutions in dictatorships, combined with the collective-action problems involved.<sup>7</sup> The question as to whether or not the latter may be overcome by the revolutionaries is a question of how commitments among different groups in a society are structured. In particular, we need to ask: Can a sufficient number  $\varphi^p$  of people commit to a participation in a specific type of collective action called revolution, even when facing the threat of severe punishment, injury or even death? Can powerful “leadership revolutionaries” among  $\varphi^p$  commit themselves to a promise to share the benefits after a successful revolution with the non-leaders? Alternatively, can a government commit to a promise to favor some potentially threatening groups in society in order to melt down their particular revolution potential and, hence, to undercut their revolutionary intentions? Focusing on the last of these questions alone, as *AR* do, allows for reanimating the romantic view that revolutions occur when unjust elites oppress an impoverished citizenship.

But why, then, is there no revolution in North-Korea or in Myanmar? Why didn’t the Germans get rid of the Nazi regime when at least since 1943 they must have known that this regime was about to destroy their country almost entirely (let alone the “rest” of Europe)?

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<sup>7</sup> *Bienvenu van de Walle* (1989) provide evidence that African government leaders’ probability to survive another year in office depends on their accumulated skill to build and maintain networks which support their power position.

There have well been endeavors for ousting *Hitler* from as early as 1933 on, especially so within the German army, the *Wehrmacht*. And it has long been a more or less open secret within the *Wehrmacht* as to who belonged to the potential rebels and who even planned on an assassination of *Hitler*. The Nazi party has long ineffectively struggled for dissolving the structure of loyalty within the leadership elite of the *Wehrmacht*. So, surprisingly perhaps, up until at least the beginning of the 1940s potential rebels did not even need to be overly cautious, as long as they communicated strictly within the *Wehrmacht*'s leadership elite. Nevertheless, some of the most strongly opposed officers of highest ranks finally invaded European countries as chief commanders of their respective divisions, instead of exploiting the huge power of the *Wehrmacht* for ousting the Nazis. Indeed, some commanded the invading divisions while, at the same time, they conspired within the *Wehrmacht* in order to assassinate *Hitler* – but unsuccessfully so. They were unsuccessful because they were struck in a system of loyalties, commitments, and missing commitments, and collectively, the potential rebels within the *Wehrmacht* turned out to be incapable of reaching the necessary commitments within that system (for a detailed presentation, see *Fest*, 1996).

So, once again, why are there sometimes revolutions and sometimes not, and why are there sometimes no revolutions even in the worst situations? In our view, we cannot find answers to that question by constructing revolution constraints, the way *AR* do, since revolution potentials are all over the places. Instead, we have to be aware of the revolution cycles and then to look at the whole structure of commitment problems which only in its entirety decides on whether or not there is political stability or revolution.

### 5. Conclusions

We have revisited the approach by *Acemoglu* and *Robinson* for explaining governmental change in non-democracies. *AR* focus on income differentials and view distributional conflicts between the usually rich elite in these societies and the poor citizenship as the central explaining factor behind revolutions. Hence the rich are constraint in their policy by a threat

of revolutions which becomes virulent whenever there is a potential for the poor citizens to gain net income by way of violently ousting the incumbent government. We have called that a revolution potential in this paper. It is true that *AR* mention the collective-goods problem involved in organizing revolutions, but they apparently do not want to focus on that question. Rather, they assume that whenever there is a revolution potential the citizens will sooner or later find a way for overcoming this problem.

By contrast, we have redirected the focus back to the collective-action problem which we view as the central issue for any revolution. As long as inequality were indeed the only source of revolution potentials, abstracting from collective-action problems the way *AR* do may still be appropriate in order to concentrate on some other aspects of interest. However, inequality is not the only source of revolution potentials. As shown in section 4 revolution potentials are to be expected everywhere, theoretically even in societies with fully equal income or wealth distribution. We have generalized this finding by stating that every non-democratic society is potentially subject to revolution cycles with respect to the assignment of income and wealth positions much the same way as every democratic society is subject to voting cycles in that respect.

Given the problem of revolution cycles, we have focused on the conditions under which the participating groups can credibly commit to the promises they make prior to a revolution. Specifically, the revolutionary elite needs to find a way for committing itself to an equal sharing of the net benefits, or at least to a scheme which leaves some net benefit to each member of the revolutionary crowd. This, however, is only what we have explored somewhat closer. In more general terms, revolutionaries usually have to develop and install a whole complex structure of commitment devices for all kinds of strategic interactions associated

with a revolution.<sup>8</sup> Regrettably perhaps, there is neither any theoretical indication nor any convincing empirical evidence that a mass of poor and powerless people would be specifically capable of organizing themselves into a group of committed and effective revolutionaries. Hence, they are hardly the first whom a rational dictator would consider to be exceptionally dangerous.

Our results can be generalized in order to identify a fundamental difference in the way governments change in either dictatorships or democracies. It should be clear from the above analysis that one cannot reduce the difference between dictatorship and democracy to different levels in the costs of collective decision-making such that a “revolution constraint” is simply somewhat less strict than a corresponding reelection constraint in a democracy. Rather, a democracy is fundamentally different from dictatorship in that point. Specifically, gross inequity or inequality as well as poor government performance can effectively be constrained in a democracy because in that system there is a general right to cast a vote at practically no cost for each person. Hence, there is no collective-action problem to be solved in a democracy. Rather, whenever a majority is of the opinion that the incumbent government acts in an inequitable manner, the respective government will be automatically ousted. There is nothing to be organized here, there are no commitment devices to be installed and there is not even anything to be coordinated.

This is dramatically different in a dictatorship, since even if a majority of poor people is fully consensual in their desire for a change in government, somebody has to coordinate the

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<sup>8</sup> This question has been extensively analyzed in the economic theory of religion for radical religious groups such as *Hamas*, *Hezbollah*, or the *Taliban*, who appear to be extremely effective in organizing defection-proof structures within their respective militias. See, for example, *Berman* (2003); *Berman/Laitin* (2008). The results are not dependent on the religious background and can thus likewise be applied to other militant and/or revolutionary groups.

necessary activities and somebody has to install defection-proof strategies for all groups and individuals involved. And defection is not conditional on some moderate costs that free riders would have a certain incentive to save. Rather, we are talking about loss in personal and professional perspective, in personal freedom, health or even live. Hence a revolution really needs sophisticated mechanisms for committing all the different participating persons and groups. Sometimes the potential revolutionaries are able to provide these mechanisms and sometimes, probably more often, they are not. There is no reason to see this capacity related to the degree of income inequality, which is why income inequality or, more generally, economic misery of the citizens itself is not a good predictor for a revolution. Finally, this is also why it may happen that a country with only moderate income inequalities finds itself in a series of revolts and revolutions while some other country with gross inequalities in income or wealth “enjoys” long-term political stability.

The myth of an uprising people which liberates itself from oppression has fired human imagination since biblical times, and it survives precisely as long as we ignore the problem of collective action. Nevertheless, as soon as the problems of collective action are taken serious, any inference from inequality to a revolution or, in the words of *AR*, any revolution constraints collapses. The only structure in which governments are systematically restricted in oppressing a majority of the population by that very majority is democracy, since there a government must always take into account that it may be ousted practically out of nothing, with no necessary collective action whatsoever, simply because it has been too bad.<sup>9</sup> This is probably the most striking difference between democracy and dictatorship.

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<sup>9</sup> True, it may happen that governments are (accidentally) ousted by a poorly informed or even ideologically influenced electorate. But this is just another story, although it has to do with costs and positive externalities of casting a well-informed vote (see, e.g., *Caplan*, 2008). For the generalization of our argument, however, we just need the costless vote, not the costless and very well informed vote.

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