The Politics of Co-optation [1]

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Abstract

Our model consists of two groups. Group 1 holds political power and Group 2 threatens this power. Group 1 decreases the probability of its upheaval by co-opting some agents from Group 2 into a more benign third group. Improvements in the upheaval technology lead to fewer but better co-optation offers. Increasing the size and/or the degree of fragmentation of Group 2 has the opposite effect. If the co-opted group also threatens Group 1, co-optation transfers are reduced.Our model provides a new explanation of why growth is a politically stabilizing force. The theory suggests that, in post-Communist privatizations, unstable governments will give large benefits to a small number of beneficiaries while stable governments will give small benefits to a large group.

JEL Classification Numbers: D74, P26, D3.

"Men must be either pampered or crushed"

Niccolo Machiavelli, *The Prince*, (1981, p. 37)

1 Introduction

Examples abound of situations in which one social group threatens to take political power away from a second group. In nineteenth century Europe, traditional elites in many countries were threatened with revolutions. In Russia, this threat was eventually fulfilled. In recent times, Communist countries in the Soviet Union and Eastern Europe faced a similar threat that was eventually realized. In a final twist, many market-oriented regimes in these countries have faced various reversal threats to their reformist policies in the Post-Soviet era.

A common response of governments that face such threats is to co-opt the potential opposition. Many of the privatization processes conducted in Eastern Europe and the former Soviet Union in the 1990s can be viewed as attempts to build an active constituency in favor of the transition from central planning to the market. The Russian case would be a prime example; see Boycko, Shleifer and Vishny (1995) and Shleifer and Treisman (2000). The Russian government took the view that there already existed a very strong interest group, represented by the traditional industrial and agricultural power structure, in the country. Any economic program that attempted to disenfranchise all of these stakeholders would be undermined by them. Therefore, the privatization process was designed to pass most of the government's wealth to this coalition group.[2] The idea was to co-opt a subset of them explicitly and link the self interest of these members to the marketization process. The strategy was successful in the sense that it allowed the reform process to proceed. Shleifer and Treisman (2000) take a close look at Russia's privatization program from a political perspective and argue that "there are two ways that a stakeholder can be neutralized. Either he must be *expropriated* of the stake that gives him leverage. or he must be *co-opted* - persuaded not to exercise his power to obstruct. ... *Co-optation (...)* implies not dealing the stakeholders out of the game but dealing them new cards. ....transforming stakeholders from opponents to supporters of reform often requires the creation of rents by the government that these stakeholders can be offered in exchange for their support." (Shleifer and Treisman, 2000, p. 8 and 9). According to this analysis, there was no alternative to the strategy of turning over significant property rights to entrenched stakeholders. The model we develop is consistent with this interpretation of Russian privatization.

Imperial Russia attempted similar co-optation policies, including Prime Minister Stolypin's wager on the strong and sober campaign that tried to give ambitious peasants a stake in the system Nove (1972). Lenin feared greatly this policy, opining that "if this should continue for very long periods of time ... it might force us to renounce any agrarian program at all.

" (Morehead, 1958, p.69). Obviously, these co-optative efforts were not sufficient to avoid a revolution.[3]

In the Soviet period, the whole system of Communist Party membership, with its associated array of special privileges, was clearly aimed at co-opting potential opposition. Indeed citizens of Communist countries held no realistic chances of rising to positions of authority in the system unless they were party members. At the same time, the advantages of membership were conditional on full loyalty and support for the regime (Voslensky, 1984).

The above situations are of a wrenching, even revolutionary, sort but there are other types of upheavals that, while not favored by groups in power, do not carry the same cataclysmic implications. These include what are commonly called middle class or bourgeois revolutions in which a newly enriched and empowered group carries out a more benign and progressive reordering of society so that old elite groups lose their special privileges. This scenario seems particularly relevant for contemporary Asia. Taiwan's democratization fits this pattern; many people are hoping for similar developments in countries like Indonesia, Singapore, and China. In these countries, the co-optation strategy may be viewed as a government policy that allows people to grow rich through their own efforts. Rather than stifling entrepreneurial activity, this policy allows a middle class to develop that might eventually challenge the political monopoly of the party in power, albeit in a less disruptive way than an expropriative revolution.[4]

This paper develops a single framework that captures the similarities in their underlying incentive structures. After a review of related literature in Section 2, we develop a model in which one social group, Group 1, holds political power but is threatened by another group, Group 2 in Section 3. With a probability that is increasing in the number of members in Group 2, there will be a major upheaval that will expropriate a substantial portion of Group 1's wealth. To diminish the likelihood of such an outcome Group 1 co-opts some people from Group 2 by creating a new group, Group C, that is newly empowered in the system and does not support revolutionary measures. Entry into Group C yields the benefit of a co-optative transfer but comes at the cost of giving up an option to benefit from a successful upheaval. Therefore, the size of the co-optation transfer must satisfy an incentive compatibility constraint requiring that individuals will accept only co-optation transfers that improve their welfare. Group 1 chooses the number of people to co-opt so as to maximize its own utility subject to this incentive constraint.

Within the context of Russian privatization, Group 1 represents the reformist government and Group 2 represents the opposition, i.e., the traditional industrial and agricultural power structure. Group C consists of those who benefited from the privatization process. Many of these beneficiaries are now among the richest people in Russia.

One novel feature of this model is that, when Group 1's optimization problem has an interior solution, unequal treatment of equals results. In particular, although everyone in Group 2 is indistinguishable ex ante, ex post some of them are treated well, i.e., they receive co-optation payments, and some of them are crushed, i.e., all their taxable income is seized.

We have two different parameters in the model, both of which comprise what we call the technology of upheaval. The first gives the fraction of the total wealth of society that would be destroyed in the event of upheaval. Decreasing this parameter represents an improvement in upheaval technology and leads Group 1 to co-opt fewer people at a higher price per person. Improvements in upheaval technology involving a parameter that governs the relationship between the number of unco-opted people in Group 2 and the probability of upheaval have similar effects. Taken together, these results justify a seemingly paradoxical outcome. Societies in which the revolutionary technology is weak, i.e., politically stable societies, generate large co-optation programs when measured by the number of people co-opted, although co-optation payments are low compared to those in unstable societies. These results also have an interesting interpretation in terms of post-Communist privatization. Specifically, they predict that countries like Russia, in which the initial support for the reform process was narrow, will give generous deals to a small group of insiders in order to consolidate the continuance of reforms. On the other hand, countries like Poland and Hungary with much wider bases of support for reform will spread the benefits of privatization less generously but to a much wider group. The other crucial parameter of the model is the relative size of Group 1. We show that increasing the size of Group 1 relative to Group 2 leads to less co-optation and higher co-optation transfers. We show that the net effect of those two changes is that less total resources are expended on co-optation.

The baseline model assumes implicitly that recipients of co-optation offers cannot co-ordinate a strategy for accepting or rejecting, i.e., the full fragmentation case. In Section 4, we allow for co-ordinated rejections by considering a variety of cases ranging from full ability to co-ordinate for groups of any size, i.e., the no fragmentation case, to limited rejection ability for groups only up to a various sizes. In the no fragmentation case, either every member of Group 2 is co-opted or nobody is co-opted. In other words, when Group 2 is highly organized, Group 1 is not able to treat equals unequally. Another interesting feature is that Group 1 will create a co-opted class that is as divided as possible, i.e., it follows a divide-and-rule strategy.

In Section 5, we extend the model to incorporate the possibility of a different type of upheaval driven by Group C. This could be viewed as a middle class or bourgeois revolution that would have the effect of equalizing income between Groups 1 and 2. Because of the additional option allowed for Group C, co-optation transfers are now lower. The basic model has the property that a society's wealth has no effect on Group 1's behavior and, hence, on the upheaval probability. However, in Section 6, we show that, when the equilibrium upheaval probability is decreasing in wealth, growth is politically stabilizing.

Finally, in Section 7 , we extend our framework to allow for partial co-optation and find that Group 1 will not avail itself of this option in general. Rather than working the intensive margin and partially co-opting a large number of people, anyone who is co-opted will be fully co-opted. In Section 8, we conclude with some further comments on post-Communist privatization and an agenda for the future.

2 Literature review

Machiavelli was perhaps the first to address the question of how to implement major reforms despite the presence of opponents in *The Prince* (Machiavelli, 1981). In the sociology literature, and in particular in the theory of organizations, the co-optative process has been viewed as a mechanism of adjustment aimed at guaranteeing stability for an authority in the face of a threat (Selznick, 1948, Collins, 1988). Our theory of co-optation is linked with the political economy literature starting with Tullock (1971) who investigates why people take the extreme risk of participating in revolutionary movements rather than free riding on the activity of others. In Buchanan and Faith (1987), a non-elite group uses secession instead of upheaval to constraint the elite's power. Grossman (1991) treats time spent participating in an insurrectionary movement as an investment in an agent's post-insurrectionary income, if an insurrection occurs.[5] However, Grossman considers only events analogous to our first type of upheaval. Moreover, he models families allocating their time between productive work, support for the existing regime through paid soldiering, and activities to overthrow the current regime. In our model, membership in a social group automatically places one either for or against each of the two types of upheaval so that our focus is on mobility between groups. Grossman (1994) extends his work by replacing insurrectionary activity having a stochastic return, with deterministic banditry by peasants against landlords. Landlords can give land to peasants to divert their efforts from banditry to farming. Such give-aways are similar to, although more specific than, our co-optation payments. However, in our case, the goal is to decrease the probability and soften the consequences of upheaval rather than to prevent banditry. Horowitz (1993) has a dynamic model of land reform in which gifts of land to peasants make them press for even more land. In this approach, there are only two groups so that any transfers are given equally to all peasants and all conflicts are resolved according to an exogenous probability distribution. In Acemoglu and Robinson (2000), extension of a franchise can be seen as a sort of co-optation policy to avoid upheaval, since franchise extension implies redistributive transfers. However, franchise extension, when granted, involves the entire threatening group. In our paper, the co-optation strategy implies the creation of a new, privileged group that separates itself from its group of origin. Thus, their paper studies policies that treat an entire class uniformly while we consider asymmetric treatment of a co-opted group and a non-co-opted one. Biais and Perotti (1998) model a privatization process in which the government underprices assets with the goal of getting the median voter to oppose redistribution. Their concerns are similar to ours but they study democratic societies with majority-rules voting. Wintrobe (1998) presents a general theory of dictatorships that hold power through a combination of repression and loyalty, a concept that functions similarly to what we call co-optation. Gershenson and Grossman (2001) analyze the changing mix of co-optation and repression that the Soviet elite used to hold power mainly in response to exogenously changing international threats.[6]

Our work differs from all of the above papers in two important respects. First, we derive the comparative static result that societies with stronger upheaval technologies co-opt more people with larger offers than societies with weaker upheaval technologies. Second, we derive conditions for unequal treatment of equals to emerge as an optimal solution to the elite's problem.

3 The Basic Model

Consider a society comprised of two groups. Group 1, of size μ_1, holds political power and Group 2, of size $\mu_2 = 1 - \mu_1$, threatens this power. Individuals in the two groups have incomes y_1 and y_2 respectively.

Group 2 threatens to carry out an upheaval that would completely expropriate Group 1 and divide up the spoils that are not destroyed in the process evenly among its members. In order to decrease the chances of an upheaval, Group 1 co-opts some agents from Group 2 into a third group, Group C, that is given a sufficient stake in the status quo so that it does not support upheaval. Let μ_C denote the size of Group C and let $\mu_R = (\mu_2 - \mu_C)$ denote the mass of individuals who remain in Group 2. This will be determined endogenously in a manner to be specified shortly. We assume that the probability of upheaval is determined by the number of people who remain in Group 2 after co-optation has taken place according to the formula ${\mu_R}^{\alpha}, 0 < \alpha < 1$, where the parameter α is a measure of the strength and organization of the non-co-opted individuals.[7] In the event of upheaval Groups 1 and C receive incomes of 0 while each member of Group 2 will get $\frac{(1-\delta)(\mu_1 y_1 + \mu_2 y_2)}{\mu_2} \equiv \frac{(1-\delta)Y}{\mu_2}$ where $0 < \delta < 1$ represents the fraction of the total wealth of the society that would be destroyed in an upheaval.[8]

Group 1 has strong redistributive powers and takes in taxes all of Group 2's income.[9] Then Group 1 uses some of its resources to co-opt part of Group 2 into a new Group C by making a co-optation offer, c, to a mass, μ_C, of members of Group 2. Any individual who accepts a co-optation offer forfeits his right to benefit from a successful upheaval, i.e., he gives up an option on income $\frac{(1-\delta)Y}{\mu_2}$ to be collected with probability ${\mu_R}^{\alpha}$.[10] On the other hand, the co-optation transfer will only be consumed only by the individual to whom it is offered in the event that upheaval does not occur. Therefore, the minimal acceptable co-optation offer must satisfy the following incentive compatibility constraint:

$$ {\mu_R}^{\alpha} \frac{(1-\delta)\,Y}{\mu_R} \leq (1-{\mu_R}^{\alpha})c. \tag{1} $$

Recognizing that Group 1 will never offer more money than is necessary, inequality (1) will be satisfied with equality. Consequently, the co-optation payment as a function of the number of agents co-opted is:[11]

$$ c\,(\mu_C) = \frac{\mu_R^{\alpha-1}\,(1-\delta)\,Y}{1-\mu_R^{\alpha}}. \tag{2} $$

The problem for Group 1 is to maximize its expected income by deciding how many people to co-opt, given that it must respect the incentive compatibility constraint. In other words, Group 1 solves the problem:

$$ max_{0\leq\mu_C\leq\mu_2}(1-{\mu_R}^{\alpha})\frac{Y-\mu_C c(\mu_C)}{\mu_1}. \tag{3} $$

For $\alpha+\delta>1$, i.e., if the revolutionary technology is not too strong, there is an interior solution given by:

$$ \mu_C^{*} = \frac{\alpha+\delta-1}{\alpha\delta}\mu_2\ , \tag{4} $$

which implies that the co-optation payment will be:

$$ c^{*} = \frac{\left[\mu_2\frac{(1-\alpha)(1-\delta)}{\alpha\delta}\right]^{\alpha-1}(1-\delta)\,Y}{1-\left[\mu_2\frac{(1-\alpha)(1-\delta)}{\alpha\delta}\right]^{\alpha}}. \tag{5} $$

For $\alpha + \delta \leq 1$, a corner solution in which $\mu_C^* = 0$ and $c^* = \frac{\mu_2^{\alpha-1}(1-\delta)Y}{1-\mu_2^{\alpha}}$, i.e., no co-optation takes place, is optimal. Inspection and simple analysis of equations (4) and (5) leads to the following proposition for an interior solution.

Proposition 1. Suppose $\alpha + \delta > 1$, then a higher (lower) δ leads to a higher (lower) number of people co-opted, μ_C^*, and a lower (higher) co-optation payment, c^*. A higher (lower) α also leads to higher (lower) μ_C^* and lower (higher) c^* . A lower (higher) μ_2 leads to a lower (higher) μ_C^* and a higher (lower) c^*. μ_C^* does not depend on the initial distribution of income or on its level, i.e., y_1 and y_2 or Y.

Increasing δ is interpreted as a worsening in the upheaval technology of, since higher δ means that more resources would be wasted in the event of upheaval. Hence, upheaval is less attractive to Group 2 members and the cost of co-optation is decreased. Group 1 responds to this lower price by co-opting more individuals.

Increasing α is a worsening in the upheaval technology as well, since a higher α means a lower probability of an upheaval for any given $\mu_R < 1$. This type of worsening has the same qualitative effect as increasing δ, i.e., it leads Group 1 to co-opt more people at a lower price per person. Notice that increasing α does more than just shift the probability-of-upheaval curve downwards; it also decreases its slope for every μ_R. So the benefit to Group 1 of co-opting additional individuals will now be lower because the probability of upheaval will be increasing more rapidly in μ_C. This effect will induce less co-optation. Our result shows that the former effect dominates the latter one with the final outcome involving more co-optation at a lower price.

These two results suggest that the countries that were the least stable, i.e., those facing significant chances of reversals, would be expected to implement privatization programs that gave large benefits, i.e., a large c^*, to a small group, i.e., μ_C^*. The next result in the proposition is intuitive but should not to be taken for granted. A larger Group 1 means that co-optation costs are shared among a larger number of individuals so one might expect them to co-opt more individuals from Group 2. However, Group 2 will be smaller in this case and the corresponding upheaval probability will also be smaller. The weaker threat dominates and Group 1 co-opts fewer people.

The last result makes sense since it is only relative incomes in the three groups after redistribution that matter. However, in Section 6, we give extensions of the model that eliminate this homogeneity in income. Simple calculations[12] lead to the following proposition.

Proposition 2. Suppose $\alpha + \delta > 1$, then a larger (smaller) size of Group 1, μ_1, leads to a lower (higher) size of total co-optation transfers, $\mu_C^* c^*$.

Therefore, variation in the initial structure of society has implications for the size of total transfers. In particular, a society in which the group in power is smaller leads to larger transfers. From Proposition 1, a smaller

Group 1 implies a smaller individual co-optation transfer but it also implies a larger fraction of Group 2 being co-opted.

An interesting question is whether co-optation payments will be so large that Group C ends up better off than Group 1. Group 1 gets strictly more income than Group C if and only if $\frac{Y}{\mu_1+\mu_C} > c^*$, which happens if and only if:

$$1 > \frac{\left[\mu_1 \left(\frac{(1-\mu_1)(1-\alpha)(1-\delta)}{\alpha\delta}\right)^{\alpha-1} + \left(\frac{(1-\mu_1)(1-\alpha)(1-\delta)}{\alpha\delta}\right)^{\alpha}\right](1-\delta)}{1-\left(\frac{(1-\mu_1)(1-\alpha)(1-\delta)}{\alpha\delta}\right)^{\alpha}}. \tag{6}$$

This condition will be satisfied for at least some sensible parameter values in which an interior solution is guaranteed. For example, if $\mu_1 = \frac{1}{4}$, $\delta = \frac{1}{2}$, and $\alpha = \frac{3}{4}$, the inequality is satisfied.

4 Fragmentation of Group 2 and Divide-and-Rule Tactics

In the above analysis, each member of Group 2 is treated as insignificant. Each individual who is offered a co-optation payment decides whether or not to accept it but his decision has no effect on the mass of Group C and, hence, on other individuals' decisions. Thus, we have assumed implicitly that sub-groups are unable to co-ordinate their actions and will call this the full fragmentation case.

In contrast to the full fragmentation case, suppose that any sub-group of Group 2 of any size is free to agree on a binding commitment to refuse co-optation as a group. The only restriction is that each member of the sub-group must gain strictly from following the prescribed course of action if every other member of the sub-group does so. We call this case the no fragmentation case. Specifically, the incentive compatibility constraint (1) becomes:[13]

$$\mu_2{}^{\alpha}\frac{(1-\delta)\,Y}{\mu_2} \leq (1-\mu_R{}^{\alpha})c \tag{7}$$

and equation (2) becomes:

$$c_1\left(\mu_C\right) = \frac{\mu_2^{\alpha-1}\left(1-\delta\right)Y}{1-\mu_R^{\alpha}}\ . \tag{8}$$

Group 1's maximization problem is:

$$max_{0\leq\mu_C\leq\mu_2}(1-\mu_R{}^{\alpha})\frac{Y-\mu_C\frac{\mu_2^{\alpha-1}(1-\delta)Y}{1-\mu_R^{\alpha}}}{\mu_1} \tag{9}$$

which can easily be shown to be convex. Therefore, it has no interior solution. The solution is

$$\begin{aligned} \mu_C &= \mu_2,\ \text{when}\ \mu_2^{\alpha}\leq\delta \\ \mu_C &= 0,\ \text{when}\,\mu_2^{\alpha}\geq\delta \end{aligned}$$

In the no fragmentation case, either full co-optation or no co-optation is optimal depending on the strength of the upheaval technology. When the technology is sufficiently strong, i.e., with a combination of low enough δ and high enough α, there is no co-optation. The intuition is that good upheaval technology means that co-optation is prohibitively expensive. One different result is that raising μ_1 (lowering μ_2) can now lead to more co-optation rather than less. This happens if we begin from a position of no co-optation and then decrease the size of Group 2 until we reach a point where the upheaval threat is weak enough that Group 1 switches to full co-optation. After this point, decreasing the size of Group 2 any further will decrease the size of the co-opted group since everyone is getting co-opted from an increasingly smaller group.

The contrast between the full-fragmentation and no-fragmentation cases is interesting from the point of view of the Machiavellian quote that begins the paper. In the latter case, Group 2 is completely united and each member is treated equally. In the former case, Group 2 is completely disorganized and ex ante equals are treated unequally ex post. In particular, Group 2 is split into two sub-groups with diametrically opposed objectives. In other words, Group 1 will follow a divide-and-rule strategy when disorganization among the opposition permits.

Next we define intermediate degrees of fragmentation. Suppose Group 2 is divided into N sub-groups which, for simplicity, we assume to be of equal size. Only agents belonging to the same sub-group can agree on co-ordinated rejections of co-optation offers. For example, the sub-groups might be ethnic groups. Co-operative agreements are possible within a homogeneous ethnic sub-group but there is not enough trust to make agreements across sub-groups. Of course, ethnicity is just one example of a characterization that can divide one sub-group from another; others could be class and income.

Suppose that Group 1 co-opts equal numbers of agents from each sub-group. In this formulation, the incentive compatibility constraint becomes:

$$\left(\mu_R + \frac{\mu_C}{N}\right)^{\alpha} \frac{(1-\delta)\,Y}{\mu_R + \frac{\mu_C}{N}} \leq (1 - {\mu_R}^{\alpha})c, \tag{10}$$

and equation (2) becomes:

$$c_N\left(\mu_C\right) = \frac{\left(\mu_R + \frac{\mu_C}{N}\right)^{\alpha-1}(1-\delta)\,Y}{1-\mu_R^{\alpha}} \ . \tag{11}$$

Group 1's maximization problem is:

$$max_{0\leq\mu_C\leq\mu_2}(1-{\mu_R}^{\alpha})\frac{Y - \mu_C\frac{\left(\mu_R+\frac{\mu_C}{N}\right)^{\alpha-1}(1-\delta)Y}{1-\mu_R^{\alpha}}}{\mu_1}. \tag{12}$$

The first derivative of the maximand with respect to μ_C is:

$$\alpha\mu_R^{\alpha-1} - (1-\delta)\left[\mu_C\left(1-\alpha\right)\left(\mu_R + \frac{\mu_C}{N}\right)^{\alpha-2}\frac{N-1}{N} + \left(\mu_R + \frac{\mu_C}{N}\right)^{\alpha-1}\right], \tag{13}$$

which does not yield a closed-form solution for μ_C. Simple inspection indicates that the comparative static result for δ is still true. Better upheaval technology in the form of a lower δ will not increase the number of co-opted agents.

Instead of assuming that Group 1 co-opts equal numbers from each sub-group allow Group 1 an unconstrained choice over the distribution of sub-groups. Then, for any given number of co-opted individuals, μ_C, it is optimal for Group 1 to select equal numbers from each sub-group. To understand the intuition of this result note that a co-optation payment must be robust to attacks from each sub-group. In particular, it must be large enough so that the largest co-opted sub-group, i.e., the biggest threat, will not benefit from rejecting co-optation together. Therefore, to minimize the cost of co-opting μ_C, Group 1 must make the largest co-opted sub-group as small as possible by creating co-opted sub-groups of equal size. Thus, another dimension of the divide-and-rule strategy appears as Group 1 deliberately creates a co-opted class that is as divided as possible.

5 Two Types of Upheaval

We now consider a second type of upheaval led by Group C. Despite the fact that its members have all been co-opted, Group C might still pose a threat to Group 1. Suppose that Group 1 as an elite group and Group 2 is a lower, disadvantaged class while Group C is an emergent middle class. In Section 2, Group C was co-opted by Group 1, which opposes an expropriative upheaval. At the same time, Group C did not acquire all the privileges of Group 1, which kept control of society's redistributive policies. In many societies, the middle class presents the most plausible threat to an elite group because, despite the fact that they do not pursue expropriation, they do aim at increasing their power and wealth. We capture these ideas by introducing a second type of upheaval that would merge Groups 1 and C, i.e., the old elite and the new emerging class. Specifically, if an upheaval of type 2 takes place, each member of Group 1 and Group C will receive $\frac{Y}{\mu_1+\mu_C}$ while Group 2 will get 0 which is, once again, a normalization. In this formulation, Group C is pursuing an equalitarian redistribution of income and control between Group 1 and C. Indeed, one can view the equalized payoff associated with a type 2 upheaval as the outcome of a deeper reform process that has allowed Group C to determine, jointly with Group 1, society's redistribution policies. Therefore, type 2 upheaval can be viewed as a democratization process. Finally, notice that no destruction is associated with type 2 upheavals.

As before, upheavals of type 1 lead to 0 income for Groups 1 and C and income per member for Group 2 of $\frac{(1-\delta)Y}{\mu_2}$. Type 2 upheavals make sense only if Group 1 is richer than Group C, i.e., if equation (6) is satisfied. Otherwise, there would be no incentive for Group C to support this new upheaval, which has the effect of merging the two groups. It does not make sense for both types of upheavals to occur simultaneously. Therefore, as before, we assume that the probability of an upheaval of type 1 is μ_R^α while the probability of a type 2 upheaval is $[1-\mu_R^\alpha]\,\mu_C^\beta$ where $0<\beta<1$. This means that the probability of a type 2 upheaval, given that a type 1 upheaval does not occur, is an increasing function of the number of people in Group

C.

Adding type 2 upheavals to the model yields two effects. First, it is now easier to co-opt people because, although accepting a co-optation offer still forces people to give up their option to benefit from a type 1 upheaval, they may benefit from type 2 upheavals. This lowers the price of co-optation making Group 1 inclined to make more offers. Second, the benefit to Group 1 of co-opting people is now lower because Group C poses a new threat, namely the threat of a type 2 upheaval. Of course, this makes Group 1 inclined to make fewer offers. In our formulation, the two effects cancel out and exactly the same number of people are co-opted.

In the generalized model, the co-optation offer, $\hat{c}$, must satisfy:

$$\mu_R^{\alpha}\frac{(1-\delta)\,Y}{\mu_R} = (1-\mu_R^{\alpha})\left[\frac{\mu_C^{\beta}Y}{\mu_1+\mu_C} + \left(1-\mu_C^{\beta}\right)\hat{c}\right], \tag{14}$$

which implies that:

$$\hat{c}\,(\mu_C) = \frac{\mu_R^{\alpha-1}\,(1-\delta)\,Y}{(1-\mu_R^{\alpha})\left(1-\mu_C^{\beta}\right)} - \frac{Y\mu_C^{\beta}}{(\mu_1+\mu_C)\left(1-\mu_C^{\beta}\right)}\ . \tag{15}$$

Group 1 solves:

$$max_{0\leq\mu_C\leq\mu_2}(1-{\mu_R}^{\alpha})[(\frac{Y-\mu_C c(\mu_C)}{\mu_1})(1-\mu_C^{\beta})+\mu_C^{\beta}\frac{Y}{\mu_1+\mu_C}]\ . \tag{16}$$

The fraction of people co-opted is the same as before, i.e.,

$$\hat{\mu}_C^* = \frac{\alpha+\delta-1}{\alpha\delta}\mu_2 \tag{17}$$

if $\alpha+\delta>1$. The co-optation offer is now:

$$\hat{c}^* = \frac{Y}{1-(\frac{\alpha+\delta-1}{\alpha\delta}\mu_2)^\beta}\left\{\frac{\mu_2[\frac{(1-\alpha)(1-\delta)}{\alpha\delta}]^{\alpha-1}(1-\delta)}{\left[1-\left(\mu_2\frac{(1-\alpha)(1-\delta)}{\alpha\delta}\right)^\alpha\right]} - \frac{(\frac{\alpha+\delta-1}{\alpha\delta}\mu_2)^\beta}{\left[1-\mu_2\frac{(1-\alpha)(1-\delta)}{\alpha\delta}\right]\left[1-(\mu_2\frac{\alpha+\delta-1}{\alpha\delta})^\beta\right]}\right\}. \tag{18}$$

Many of the comparative statics results from the basic model hold in this expanded version. In particular, a higher δ or a higher α lead to a higher number of people co-opted, $\hat{\mu}_C^*$,and a lower co-optation payment, $\hat{c}^*$. Furthermore, a higher μ_1 leads to a lower $\hat{\mu}_C^*$ and a higher $\hat{c}^*$. Moreover, while the number of people co-opted is the same under the two alternative versions, the probability that there will be an upheaval, $\hat{\mu}_R^{*\alpha} + (1-\hat{\mu}_R^{*\alpha})\,\hat{\mu}_C^{*\beta}$, is greater with two types of upheaval than that with one type, $\mu_R^{*\alpha}$. Finally, and with two types of upheaval rather than one, $\hat{c}^* < c^*$, i.e., the co-optation payment is lower. This result follows because, for two types of upheavals to be considered, Group C must earn less than Group 1 did with only one type of upheaval. With two upheaval types, the offer c^* made to $\hat{\mu}_C^* = \mu_C^*$ individuals is beyond the necessary threshold for acceptance because individuals accepting it would receive something extra that they do not get in the model with only one type, specifically, the chance to benefit from the second type of upheaval. When Group C does contemplate upheaval, Group

1 gives lower transfers than would be the case without this threat. Finally, we can establish that $\mu_C^* c^* > \hat{\mu}_C^* \ \hat{c}^*$. In other words, a society with a more demanding Group C ends up with smaller total transfers. A large transfer program may be viewed as a way to keep the middle class happier and more loyal.

6 Stabilizing Growth

The upheaval probability has been assumed to be a function only of the relative size of Group 2. However, a simple extension captures the notion that wealthier societies tend to be more stable. Indeed, very wealthy societies face extremely small chances of radical upheavals. Alesina et al. (1996) provide evidence that low economic growth increases the likelihood of government turnover, particularly in cases of dramatic changes in regime similar to the ones we consider. Suppose that the parameter α depends positively on Y, i.e., $\alpha'(Y) > 0$. As a society becomes richer, it gets increasingly difficult for any fixed fraction of the population to overthrow completely the existing order. Presumably a wealthy Group 1 would be willing to commit a large fraction of its wealth to defend against upheaval. In this case, the solution is of the form:

$$\mu_C^*(Y) = \frac{\alpha(Y) + \delta - 1}{\alpha(Y)\,\delta} \mu_2 \ , \tag{19}$$

with the size of Group C increasing in Y. This implies that economic growth would cause political stabilization in that the probability of an upheaval is decreasing in income. Of course, the extension would work also for the generalized model with two types of upheavals of Section 5. As in the basic model with one type of upheaval, growth would cause political stabilization in the sense that the probability of the worst kind of upheaval would be decreasing in income.

Another less obvious extension that produces a similar result involves introducing utility functions. Suppose that all agents have the same Cobb-Douglas utility function $U(w) = w^{\theta}$ where w denotes consumption, or wealth, and $0 < \theta < 1$ is a fixed parameter. Equation (2) becomes

$$c(\mu_C) = \left[\frac{\mu_R^{\alpha}}{1-\mu_R^{\alpha}}\right]^{\frac{1}{\theta}} \frac{(1-\delta)Y}{\mu_R} . \tag{20}$$

Group 1 solves:

$$max_{0\leq\mu_C\leq\mu_2}(1-{\mu_R}^{\alpha})\left[\frac{Y-\mu_C c(\mu_C)}{\mu_1}\right]^{\theta} . \tag{21}$$

Since we are interested in how the solution to (21) responds to changes in Y, suppose that Y changes to λY for some $\lambda > 0$. Note that $c(\mu_C)$ will change to $\lambda c(\mu_C)$ so the maximand in (21) will be multiplied by λ^{θ}. Therefore, the solution to (21) does not vary with Y. However, with the following reasonable modification, the solution to (21) will be increasing in Y, i.e., the richer is Group 1 the more people it will co-opt. Suppose that, in the event of upheaval, the utility of Group 1 is not fully expropriated so that its members receive some minimum positive utility. For example, some wealth might be hidden in Swiss bank accounts. In this case, (21) becomes:

$$max_{0 \leq \mu_C \leq \mu_2} (1 - \mu_R{}^{\alpha}) \left[\frac{Y - \mu_C c(\mu_C)}{\mu_1} \right]^{\theta} + \mu_R{}^{\alpha} U_{\min} \ . \tag{22}$$

The first order condition for (22) is:

$$F' (\mu_C : Y) + G' (\mu_C) = 0 \tag{23}$$

where $F'(\mu_C)$ is the derivative of the first term of (22) and $G'(\mu_C)$ is the derivative of the second term $(\mu_R{}^{\alpha} U_{\min})$. Since $G'(\mu_C) < 0$, it must be the case that $F'(\mu_C) > 0$. Moreover, $F'(\mu_C)$ is homogeneous of degree θ in Y while $G'(\mu_C)$ does not depend on Y. Therefore, if (23) is satisfied at a particular combination (Y, μ_C), it will be positive for any combination $\left(Y', \mu_C\right)$ where $Y' > Y$. We conclude that the optimal μ_C is indeed increasing in Y.

Within a similar framework, it would be possible to consider the impact of the relative wealth of Group 2. In a country that is still lacking a representative democracy, the relative wealth of a restricted oligarchy may turn out to be even more important than its mere size. If we assume that the upheaval probability is an increasing function of wealth distribution, i.e., that a wealthier Group 2 does represent a more serious threat, this results in a relatively small but well paid Group C.

7 A Note on Extensive vs. Intensive Margins

Throughout the paper, we have considered agents as either fully co-opted or as totally unco-opted. We now allow for all the possibilities of hybrid cases in which the probability of a successful upheaval will depend not only on the number of people who support upheaval but also on the total commitment to upheaval of both full and partial supporters. Let each member of Group 2 have one unit of time to be allocated between work and upheaval activity. Work pays only for agents who have received co-optation offers and c is paid per unit of work. The probability of a successful upheaval is now ν^{α} where ν is the average quantity of time that members of Group 2 have allocated to upheaval. In the event of a successful upheaval, the spoils are divided in proportion to the contribution of each individual.

The maximization problem for any agent who has received a co-optation offer is:

$$max_{0 \leq e \leq 1} e \frac{\nu^{\alpha} (1-\delta) Y}{\nu} + (1-e) c. \tag{24}$$

This problem is linear in e so that either $e = 0$ or $e = 1$ or there is indifference among all possible choices. Consider all possible degrees of fragmentation and their associated equilibria from Section 4. Except for the full fragmentation case, agents will have a strict preference for co-optation over retaining an option to benefit from upheaval. In the full fragmentation case, agents will be indifferent over all possible actions, including full co-optation. Hence, all of these equilibria are robust to allowing intermediate levels of co-optation.

Another way to look at this result is in terms of extensive and intensive margins. Under what circumstances is it better for Group 1 to work the extensive margin by co-opting a larger number of people and when is it better to work the intensive margin by improving the level of co-optation of those people who are already partial supporters? The general answer is that, to the extent that Group 1 co-opts anyone, it should do so as well as possible. In other words, everyone who is co-opted is always fully co-opted so that the only active margin is the extensive one. At equilibrium, any decrease in the co-optation offer will cause the whole arrangement to unravel.

8 Conclusion

The main conclusion from this analysis is that governments with a weak hold on power are the ones most inclined to make large gestures to widen even slightly their support base. This idea is roughly consistent with the actual practice of post-Communist privatization. The Russian government (Group 1), facing the opposition of industrial ministries, managers, workers and regional and local governments (Group 2), which held formidable power, handed over huge amounts of wealth to a very narrow section of the society that, in turn, supported Boris Yeltsin's reelection. On the other hand, Poland and Hungary, where even the successors to the local Communist parties are very pro-market, have spread privatization benefits much more widely. Although the Russian process was highly corrupt and is likely to have a poisoned legacy, it was arguably the only feasible way to proceed (Shleifer and Triesman (2000)).

Our analysis develops strategies for holding power such as divide and conquer and unequal treatment of equals. We also provide a new theory of growth as a politically stabilizing force. However, there is a wide range of important issues in this area that deserve further attention, such as the optimal mix of punishments and rewards and why some upheavals are much more violent than others.

REFERENCES

Acemoglu, Daron, and Robinson, James, A., "Why Did the West Extend the Franchise? Democracy, Inequality and Growth in Historical Perspective." *Quarterly Journal of Economics* **115**, *4:1167-99,* November *2000.*

Alesina, Alberto, Ozler, Sule, Roubini, Nouriel, and Swagel, Phillip, "Political Instability and Economic Growth." *Journal of Economic Growth* **1**, 2:189-212, June 1996.

Biais, Bruno, and Perotti, Enrico, C., "Machiavellian Underpricing." Discussion Paper No. 2014. London: Centre for Economic Policy Research, November 1998.

Boycko, Maxim, Shleifer, Andrei, and Vishny, Robert, *Privatizing Russia.* Cambridge, MA: MIT Press, 1995.

Buchanan, James.M., and Faith, Roger, L., "Secession and the Limits of Taxation: Toward a Theory of Internal Exit." *American Economic Review* **77**, *5:1023-31,* December *1997.*

Collins, Randall, *Theoretical Sociology.* San Diego, CA: Harcourt Brace Jovanovich, 1988.

Garkinkel, Michelle R., and Skaperdas, Stergios, Eds., *The Political Econ-*

omy of Conflict and Appropriation. Cambridge: Cambridge University Press, 1996.

Gershenson, Dmitriy, and Grossman, Herschel I., "Cooption and Repression in the Soviet Union." *Economics and Politics* **13**, 1:31-47, March 2001.

Grossman, Herschel I., "A General Equilibrium Model of Insurrections." *American Economic Review* **81**, 4:912-21, September 1991.

Grossman, Herschel I.,"Production, Appropriation, and Land Reform." *American Economic Review* **84**, 3:705-712, June 1994.

Hirshleifer, Jack, "The Technology of Conflict as an Economic Activity." *American Economic Review* **81**, 2:130-134, May 1991.

Horowitz, Andrew W., "Time Paths of Land Reform: A Theoretical Model of Reform Dynamics." *American Economic Review* **83**, 4:1003-1010, September 1993.

Machiavelli, Niccolo [1469-1527], *The Prince.* Harmondsworth, UK: Penguin, [1961], 1981.

Moorehead, Alan, *The Russian Revolution.* New York, NY: Time Inc., 1958.

Nove, Alec, *An Economic History of the USSR.* London: Penguin, 1972.

Overland, Jody, Simons, Kenneth L., and Spagat, Michael, "Political Instability and Growth in Dictatorships." Discussion Paper No. 2653. London: Centre for Economic Policy Research, December 2000.

Robinson, James A., "When is a State Predatory?" unpublished paper. Berkeley, CA: University of California, Berkeley, 1997.

Roemer, John E., "Rationalizing Revolutionary Ideology: A Tale of Lenin and the Tsar." *Econometrica* **53**, 1: 85-108, January 1985.

Selznick, Philip, "Foundations of the Theory of Organizations." *American Sociological Review* **13**, 1:25-35, February 1948.

Shleifer, Andrei and Treisman, Daniel, *Without a Map: Political Tactics and Economic Reform in Russia.* Cambridge, MA: MIT Press, 2000.

Skaperdas, Stergios, "Cooperation, Conflict, and Power in the Absence of Property Rights," *American Economic Review* **82**, 4: 1720-739, September 1992.

Spagat, Michael, "Nobody Expects the Spanish Inquisition: The Dynamics of Repressive Dictatorships." unpublished paper. Egham: Royal Holloway, University of London, 1999.

Tullock, Gordon, "The Paradox of Revolution." *Public Choice* **11**, 2:89-100, Fall 1971.

Voslensky, Michael S., *Nomenklatura: Anatomy of the Soviet Ruling Class.* Garden City, NY: Doubleday, 1984.

Wintrobe, Ronald, *The Political Economy of Dictatorship.* Cambridge: Cambridge University Press, 1998.

Endnotes

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2. In no way do we wish to imply that the co-opted group is poorer than the group doing the co-opting. The Russian privatization case highlights this point since it was essentially an arrangement among different elite groups with reformers co-opting industrial and agricultural ministries and managers.

3. The introduction of the welfare state in Bismarck's Prussia can also be viewed as a response to the mobilization of the working class, in

an effort to undercut more radical demands by co-opting it into the prevailing political order.

4. Some would argue that the overthrow of Communism in Eastern Europe and the Soviet Union was more like this second type of upheaval than the first.

5. On the technology of conflict, see Hirshleifer (1991), Skaperdas (1992) and Garfinkel and Skaperdas (1996).

6. More distantly related works are the following. Roemer (1985) presents a game between two agents, Lenin and the Tsar, in which the probabilities of a revolution are determined endogenously by political strategies. In this paper, the threat of retribution against participants in a revolution that fails is the Tsar's tool for holding power, rather than co-optation of potential opposition. Robinson (1997) assumes that development makes revolution more lucrative for a disadvantaged group, possibly leading the elite group to democratize so as to forestall this outcome. The elite's strategy is to refrain from investing in public goods rather than co-optation. In Overland, Simons and Spagat (2000), an elite uses rapid growth as a tool to maintain power. In Spagat (1999), repression is the mechanism of control.

7. In Section 6, we discuss how the relative wealth of the members of Group 2 could be incorporated into the formula describing the upheaval prob-

ability.

8. The income of 0 for Groups 1 and C in the event of an upheaval is just a normalization. These groups might have some resources that are completely out of the reach of Group 2 and would retain them whether or not there is an upheaval.

9. Again this is a normalization, i.e., Group 1 actually takes that part of Group 2's income that the latter group cannot shield.

10. One way to think of this assumption is that anyone who accepts a co-optation offer can be identified. Those who did not benefit from such offers are then unwilling to help those who did after an upheaval.

11. More formally, consider a game in which there is a continuum of players of mass μ_C, each with two strategies accept or reject the co-optation offer $c(\mu_C)$. For a configuration of strategies in which m_a is the mass of those who accept and m_r is the mass of those who reject, the payoffs are $[1-(\mu_1-m_a)^\alpha]\,c(\mu_C)$ for those who accept and $(\mu_1-m_a)^\alpha \frac{(1-\delta)Y}{(\mu_1-m_a)}$ for those who reject. There are two Nash equilibria of this game. In one equilibrium everyone accepts the offer, i.e., $m_a=\mu_c$, which by (1) and (2) is optimal for each player as long as everyone else is accepting. In the other equilibrium, everyone rejects the offer. We assume that Group 1 has the ability to co-ordinate agents so that the first equilibrium applies and we focus our attention on this one.

12. Combining equations (4) and (5), we obtain $\mu_C^* c^* = \frac{(\alpha+\delta-1)\left[\mu_2 \frac{(1-\delta)}{\alpha\delta}\right](1-\alpha)^{\alpha-1}Y}{1-\left[\mu_2 \frac{(1-\alpha)(1-\delta)}{\alpha\delta}\right]^{\alpha}}$, which can be differentiated with respect to $\mu_2 = 1 - \mu_1$.

13. Note that we need only to consider deviations from the previous equilibrium in which all agents who are offered co-optation payments coordinate their rejections because, if the offers are robust to this maximal deviation, they will withstand smaller challenges.