

# Beyond the Colored Revolutions: A Dynamic Model of Protest \*

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## Abstract

The popular response to a series of fraudulent elections in Serbia, Georgia, Ukraine, and Kyrgyzstan has attracted a great deal of attention from scholars. Left relatively unexplored, however, has been the legacy of these "Colored Revolutions" for the future of political protest for the countries in which they occurred. In particular, an understanding of protests in a dynamic context raises a tension. On the one hand, in a stationary setting successful protests in any first period suggests citizens would be likely to take to the streets again in a subsequent second period, should need the arise. However, the very need for subsequent protest may call into question the value of the benefits gained from the original protest, thus making participation in future protests less likely. To address these tensions, we formulate a dynamic model of policy protest behavior and apply its insights to understanding recent political developments in Colored Revolution countries.

**Key Words:** Protest, Colored Revolutions, Moral Hazard, Adverse Selection

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# 1 Introduction

In the first half of the first decade of the 21st century, it was clear something special was occurring in the post-communist world. In a series of stunning developments, a number of countries that had by and large failed to establish viable democratic governments in the original period of post-communist transitions ten years earlier suddenly rose up to demand democratic accountability following a series of fraudulent elections in such previous hotbeds of democracy as Serbia, Georgia, Ukraine, and Kyrgyzstan. Scholars of course took notice, with a flurry of articles on each individual "Colored Revolution", as they collectively came to be known, as well as a number of more recent papers that have tried to make sense of them collectively (e.g., McFaul 2005; Beissinger 2007; Bunce and Wolchik 2007; Tucker 2007). The focus of these papers, not surprisingly, lay in trying to explain how and why the Colored Revolutions took place. To the extent that they looked at all to the future, it was largely to speculate as to the next country that was likely fall in the path of this democratic onslaught (Belarus anyone?). Left relatively unexplored, however, was the legacy of the Colored Revolutions for the future of politics in the countries in which they had occurred.

Here we take up one aspect of that question in asking whether or not successful Colored Revolutions ought to make protest more likely in these countries in the future.<sup>1</sup> We begin by laying out two different *intuitive* ways in which we might expect the legacies of the Colored Revolutions to influence the future of protest movements in those countries. The most intuitive expectation would

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<sup>1</sup>An additional interesting question to ask is whether or not a successful Colored Revolution ought to make protest *less necessary* in the future precisely because governments, anticipating protest on the parts of citizens, will behave better. In the language of positive political theory, this is the classic moral hazard problem: can institutions be designed which induce good behavior from the government? (CITATIONS) We focus explicitly on this issue as it relates to protest in a separate paper (CITE MPSSA if we give this new title?), but for now limit our efforts to situations in which the government's type is determined exogenously, otherwise known as the adverse selection problem.

be one that highlights citizens' discovery of their own "people power", leading us to expect to see protests again in the future when democratic development is threatened by corrupt or inept leaders. Surprisingly, though, when we consider in sufficient detail the micro-level motivation of protestors that took to the streets in the original Colored Revolutions, a paradox emerges: to the extent that the need for a second "Colored Revolution" might emerge in a country, it will simultaneously call into question whether the gains from the original Colored Revolution were worth the costs paid by the people who participated in it. Thus far from ushering in an era of "people power", we might instead expect the Colored Revolutions to instead turn out to be "one shot deals".

Having illustrated this potentially counter-intuitive expectation through a series of thought experiments, we then attempt to provide an additional degree of rigor and precision to our expectations by crafting a formal model of protest. The model, which we present in Section 4, helps us to pinpoint the exact circumstances in which we might expect to see "one shot deals" (or protest in a first period followed by non-protest in a second period). In particular, we focus on the manner in which the behavior of a new government installed following a protest causes citizens to update on the likelihood that any subsequent protest will deliver good government, and thus on citizens' likelihood of participating in protests in the future. We conclude that there are indeed plausible circumstances in equilibrium under which even successful protest can become a "one-shot deal", and we generate comparative statics in order to more precisely refine our expectations about the conditions under which these circumstances hold.

## 2 Electoral Fraud, Protest, and Colored Revolutions

Numerous explanations have been proposed for the Colored Revolutions that took place in Serbia, Georgia, Ukraine, and Kyrgyzstan, most of which focus on the actions of elites (McFaul 2005; Beissinger 2007; Bunce and Wolchik 2006; Way 2005). In contrast, Tucker (2007) focuses on the individual level decision making of protestors in the Colored Revolutions, which we take as our starting point. This argument begins from the vantage point of assuming that abusive or unrestrained states present a classic collective action problem (Weingast 1997, 2005). Most societal actors would agree that society as a whole would be better off with a less abusive and appropriately restrained state. This is not to deny that there are individual actors in society who clearly benefit from these types of arrangements. Nevertheless, the assumption that most citizens would prefer not to have to pay bribes to policemen, health care workers and government bureaucrats and would also prefer not to have government officials stealing public funds and using their public positions for private financial gain seems to be a reasonable one. Achieving this goal in states where such abusive actions regularly take place, however, requires confronting these abuses and attempting to stop them. This can take a variety of forms, but all share two common features. First, there is a cost to any individual in taking any of these steps, from the relatively minor loss of time to the potentially major loss of livelihood or life. Second, the likelihood of success is always questionable, and this is especially so for individuals facing petty corruption in the course of daily life. This combination yields the familiar result predicted by the collective action framework: individuals "shirk" and tolerate whatever actions on the part of the state that have given rise to their grievances, and as a result everyone is worse off from having to continue to live under an abusive regime.

Major electoral fraud, however, can help solve this collective action prob-

lem.<sup>2</sup> It can do so by both lowering the costs of participating in anti-regime actions and/or increasing the likelihood of a successful result stemming from those actions. For once, the entire country is experiencing the same act of abuse simultaneously; in the language of the collective action literature, major electoral fraud provides an obvious *focal point* for action. People no longer have to choose whether to react alone.<sup>3</sup> Especially as crowds grow, individuals know that they will only be one of many, many people protesting, and thus much less likely to be punished individually. This does not mean that there is no chance of punishment - and it is certainly not meant to deny the bravery of citizens who risked harm to participate in the revolutions described above - but only to note that major electoral fraud presents an opportunity to act on grievances against the current regime without a high degree of certainty that punishment - if it is forthcoming - will be felt by you individually.

Simultaneously, major electoral fraud followed by large scale protests can dramatically increase the likelihood of a successful "result" from one's participation in an anti-regime protest. This is of course not to say that all large scale protests following electoral fraud against abusive regimes are successful. Nevertheless, in contrast to every day life, major electoral fraud offers hope for greater success in combating an abusive regime in two important ways. First, if protests follow the fraud, then immediately there is the opportunity to speak out with a much stronger voice than anyone could have alone. But perhaps even more importantly, fighting major electoral fraud holds open the hope of changing who actually wields political power in a country; if you are successful,

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<sup>2</sup>"Major" electoral fraud is defined as fraud which effects the overall outcome of an election. This is in contrast to "minor" electoral fraud, which, while in violation of electoral law, would not have changed the results of the election had it not occurred. In no way are "major" or "minor" intended as normative statements related to the level of perniciousness of the fraud.

<sup>3</sup>On focal points, see Schelling 1960; Chong 1991; Weingast 1997. Thompson and Kuntz (2005) take this one step further, arguing that not only does an election present an act of abuse aimed at everyone at the same time, but that it actually "creates an 'imagined community' of robbed voters, in which people can suppose that also their attitudes towards the regime's latest behavior are shared by their fellow- citizens" (p.11).

the bums actually can be thrown out.

While there are many other implications that we can draw about both the causes and effects of the Colored Revolutions from this framework (see Tucker 2007, 541-3), for the sake of the current argument we need focus only on the central claim: the protests at the heart of the Colored Revolutions occurred at least in part because major electoral fraud altered both the perceived costs and benefits of participating in actions aimed against an abusive/unrestrained regime. With this in mind, in the next section consider the following question: if this framework does indeed correctly explain what happened in the Colored Revolutions, then what ought to happen in the future should the country's regime once again behave in a way that is seen to threaten democracy?

### **3 People Power or a One-Shot Deal**

In order to address this question, we employ the following simple thought experiment. Assume that a Colored Revolution has indeed occurred in a given country. Then assume some period of time passes, after which some "event" occurs that suggests that the regime in power is once again acting in an unrestrained/abusive manner. Let us then attempt to answer the question of whether - based on the collective action framework posited in the previous section to model the dynamics that gave rise to the protests in the original Colored Revolutions - we would expect people to once again take to the streets to protest the action from this new "event". In this extremely simple framework, we can vary the length of time between the two events, what has transpired during this time period, and the nature of the "event" that gives rise to the new threat to democracy. For simplicity's sake, we refer to the time at which this event takes place as  $t_1$ , and the time of the original Colored Revolution as time  $t_0$ .

To start with, we would expect the experience of a Colored Revolution ought to greatly revise citizens' perceptions of both the potential costs and potential

benefits from engaging in collective action against an abusive state. The argument advanced in the previous section only got us to the likelihood of protest following electoral fraud. However, in the case of the Colored Revolutions, these protests actually succeeded in toppling governments and removing rulers from office. Thus we would likely expect a huge revision upwards in the minds of citizens of the potential benefits of protesting against an abusive state. Moreover, as the Colored Revolutions were - with some minor exceptions in Kyrgyzstan - generally nonviolent affairs that did not lead to any long term sanctions against the participants (consider events in Myanmar or Pakistan in contrast), we would also expect a downward revision in the costs associated with protest. And while spending weeks outside in Kyiv in December is clearly nothing to sneer at, by all accounts most protestors were enjoying themselves most of the time. Therefore, as long as nothing happens in the intervening period between the Colored Revolutions and the next "event", we would expect to see people likely to take to the streets again in defense of democracy.

This begs the question of what could happen in the intervening time period so as to change this cost-benefit analysis. At one extreme, so much time could pass (say 50+ years) so that the actual participants in the Colored Revolutions were no longer around to participate in a new protest, at which point it would be safe to say that the effect of the original Colored Revolutions would likely have dissipated. Given that we are still in the first decade of the twenty-first century, however, this case is of little interest at the moment, but we mention it only to highlight the fact that there is some sort of temporal upper bound to the entire process; where exactly it is may be uncertain, but is beyond the scope of our concern for the foreseeable future.

Within the relevant time frame, it is easiest to begin by considering changes to the "cost" component of the cost-benefit analysis. Simply put, we would expect that if the regime were to demonstrate credibly that it was capable of using violence against its own citizens, we might expect potential protestors at time  $t_1$  to be more hesitant to take to the streets than they were at time  $t_0$ .

This is of course far from a novel explanation of the calculus of the decision to protest, and there is nothing in the argument specific to protests that follow electoral fraud at time  $t_0$ .

Of slightly more interest, however, is to consider the question of what exactly is counted as a credible commitment to use violence. It is not difficult to come up with some obvious cases where we would say this has taken place. For example, if the head of the security services had changed, the new head was known as a hardliner, and the security services had cracked down on political dissent in a violent manner in the period of time between  $t_0$  and  $t_1$ , we would expect people to update accordingly. Where it gets interesting, however, is to consider steps short of this. How seriously might statements committing to using violence be taken in the aftermath of restraint during a Colored Revolution? And perhaps most intriguing, would it be possible for some sort of "global shift" in the perceived acceptance of repression of dissent by other regimes in the region cause domestic actors to be more fearful of rising costs to participation in protest in their own country, even where had been no such violence domestically? To put a more concrete spin on this, is it possible that participation in protests in Georgia in 2007 could have been tempered by the fact that violence was used to put down protests in Uzbekistan and, to a lesser extent, in Belarus since the time of the original Georgian Rose Revolution?<sup>4</sup> And, if so, what would be the limits of this upward cost-revision from violence in other countries? Would it matter, for example, at some future date in Serbia as well?

Even more interesting than considering revisions in people's estimates of the costs of protest, however, is considering what happens to people's revised estimates of the benefits of having participated in a Colored Revolutions. Herein lies the crux of the question: if people are expected to have revised their expect-

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<sup>4</sup>For more on recent protests in Georgia, see for example Vaisman, Daria and Fred Weir, 2007, "Georgia Verges on Repeat Turmoil", Christian Science Monitor, November 5, 2007, p.6, accessed through Lexis-Nexis.

tation of the benefits of protest against an abusive regime because the "success" of a Colored Revolution resulted in "throwing the bums out", then would the need for more protest somehow undercut the original perceived "success" of the Colored Revolution? What is particularly interesting about this tension is it is explicitly tied to an original protest at time  $t_0$  that involved a protest that actually resulted in a change in who held office, as did the Colored Revolutions.

We can consider the paradox of whether a need for a protest at time  $t_1$  undermines the perceived success of actions at time  $t_0$  from a number of different starting points. In all cases we will assume - as was basically the case with the actual Colored Revolutions - the protest at time  $t$  was over major electoral fraud, and that the protest culminated with a reversal of the fraud and a change of office holders in key political institutions. Let us therefore start from one extreme, and consider the case where the event demanding a protest at time  $t_1$  is again an instance of major electoral fraud, this time perpetrated by the very people who rode the tide of popular protest into office at time  $t_0$ . In this case, it seems obvious that protestors would likely think "why bother?" when considering whether or not to take to the streets again. If both sides have shown themselves willing to resort to electoral fraud to stay in office, then why should individuals risk any harm to get one side into power at the expense of the other?<sup>5</sup> This is, of course, a fairly easy scenario, but does nicely illustrate the inherent paradox.

Let us then take a step backwards from the easy first scenario and assume nothing so obvious as another case of electoral fraud at time  $t_1$ , and instead consider a scenario whereby the newly empowered government simply continues to engage in fairly corrupt practices, leading to charges that "nothing has

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<sup>5</sup>Of course, this assumes something roughly resembling a two party system, or else two distinct "forces" in a country (e.g., Ukraine, which is multiparty but has clear pro and anti-Orange forces). But even if there are three forces, we can just extend the logic out into another period with the third force also falsifying election results.

changed". Perhaps the event at time  $t_1$  is some particularly egregious act of corruption, symbolizing the fact that the new regime is no less abusive - or even only a little bit less abusive - than the previous regime. Would the people take to the streets in this case to protest the new event at time  $t_1$ ? We might expect them to hold the new government to a higher standard. But on the other hand, if the new government turned out to be just as abusive as the prior one, then people might update that although they had paid some cost to protest previously, they had now learned that they received little or no benefit from the changes that took place after that protest, which could again cause them to decide to sit this one out.

We can even back a second step away from this scenario, and still get to a point where protest looks doubtful. Consider a scenario similar to what seemed to unfold in Ukraine following the Orange Revolution. A new "better" regime comes to power following electoral fraud, only to gradually lose power to the old regime through a series of bad decisions, highlighting perhaps arrogance and/or incompetence on the part of the newly empowered forces. The result is a situation where once again the old regime is in power, and the members of the forces that had been victorious in the Colored Revolution call on the people to support them with protest. Ought people to take to the streets in this circumstance? Again, we have to wonder whether individuals, seeing that the hard work of their protest form a number of years earlier did nothing to ultimately prevent the return of the original corrupt regime to power, will decide that the benefits of protest no longer seem to outweigh the costs.

Walking through these three scenarios raises the question if there is any circumstance where we would theoretically expect citizens to take to the streets again in the years following a Colored Revolution. Let us then consider perhaps the most hospitable scenario for seeing renewed protests: the original Colored Revolution succeeds at time  $t_0$ , the new regime comes into power and behaves in a non-abusive manner but loses power in a free and fair election because of other factors (e.g., the state of the economy), and then the old regime comes

back into power, starts behaving abusively once again, and ends up committing major electoral fraud again in an effort to stay in power. If ever there was a situation conducive to a realization of the "people power" scenario whereby citizens once again rise to defend their newly granted rights, this ought to be it. And yet, we need to ask how different this scenario actually is from the preceding one. In both cases, people have protested (and therefore borne costs) at time  $t$ . In both cases, citizens find themselves at a time  $t_1$ , where the people they threw out of office at time  $t$  are back in power and continuing to behave in an abusive manner. What, therefore, can citizens logically conclude was the benefit gained from the costs they paid in participating in protests at time  $t_0$ ? And, more importantly, what is the point of risking harm in a new Colored Revolution, if the ultimate result is that the "bums" always come back to power?

The purpose of this thought experiment was to raise questions about the possibility that the Colored Revolutions could in fact turn out to be "one-shot deals", with little long term effect on the likelihood of citizens to take to the streets in the future to protect the accomplishments of that revolution.<sup>6</sup> Having established at the very least some credible reasons to suspect this could be the case, in the following section we explore whether such a "one-shot deal" scenario is a formally possible equilibrium solution, and, if so, under what circumstances is it more or less likely.

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<sup>6</sup>We want to be clear that this is not meant to be a normative statement one way or another. There are certainly costs associated with living in a country where political protest is a frequent occurrence. Indeed, the best case scenario for a post-Colored Revolution country is probably one where the citizenry does *not* have to return to the streets again because the government, anticipating the possibility of protest, chooses to behave well and does not engage in electoral fraud in subsequent elections. As noted previously, we take up the likelihood of this type of scenario elsewhere.

## 4 An adverse selection model of protests

We now consider a stylized model to focus on some of the key tradeoffs in the discussion. This analysis illustrates how two features can support the behavioral pattern in which citizens decide to undertake costly action to protest poor performance and then after seeing that the new government is also bad, decide not to protest to remove it. The first feature is fall iff (ADAM: WHAT IS THIS SUPPOSED TO SAY?) in the value of the future. Citizens can be willing to protest in one period and then not protest in the future if at the second period their concern for downstream outcomes is smaller than it was in the first period. Second, and perhaps, more subtly, citizens may be willing to protest early and then lose the taste for such action, if they are learning about the political environment (and not just about particular individuals). If, following a protest, the new government also turns out to be "bad" this may lead the citizen to believe that most "new" governments are bad and thus the price of protesting is not worth paying. Drawing on the idea that electoral fraud can serve as a focal point to help solve coordination problems we abstract away from the complexities of coordinating a protest and focus on a single representative citizen,  $v$ . The citizen lives for 3 periods. In each of two periods,  $t \in \{1, 2\}$  the citizen experiences government performance and must decide whether to replace the government (by undertaking a costly protest) or retain the government for the next period. In period  $t = 3$  the citizen consumes the performance (as in the earlier periods) but is not free to act on the government (think of the citizen as dying before the chance to replace the government or just not caring about all periods after  $t = 3$ ). We also look at the case where the citizen is myopic, at any period that she must decide whether to protest she cares only about the next period of government performance. In period  $t \in \{1, 2, 3\}$  the government is either well-behaved or corrupt. For now, we treat government performance as exogenous, but random. In particular we assume that the performance of a new government in period  $t$  is  $g_t \in \{0, 1\}$  with  $\Pr(g_t = 1) = \pi$ . Let  $g_t = 1$  denote a well-behaved government and  $g_t = 0$  denote a corrupt one. We further

assume that the payoff to the citizen from government performance is just  $g_t$ . We assume that the performance of a particular government is persistent or perfectly correlated over time, so that the performance of a government in period  $t$  coincides with its performance in period  $t - 1$ .<sup>7</sup> To capture a situation in which the citizen faces uncertainty not just about a particular government but also about the pool of possible governments we assume that  $\pi$  itself is unknown to the citizen. The citizen has a prior belief about this parameter, namely she starts the game with the belief that  $\pi \in \{l, h\}$  with  $\Pr(\pi = h) = q$ . In each period, the citizen observes  $g_t$  and decides whether to replace the government by protesting or to accept the government for the next period. We assume that a protest is costly to the citizen and denote this cost by  $c$ .

We begin by considering the decision problem of a citizen in the second period. In the second period, the citizen has observed the draw  $g_1$  and she has observed  $g_2$  with the latter coming either from the same government or the result of a replacement. Thus there are a total of 8 distinct histories. For each of these histories the citizen has an assessment of both the quality of the current government as well as an assessment of the underlying parameter  $q$ . We denote a history in the following manner,  $(g_1, r, g_2)$  where  $g_i$  is, as before, the service levels and  $r \in \{0, 1\}$  denotes whether the government was replaced in period 1 -let 1 denote a replacement and 0 retention. Accordingly, when  $r = 0$  then  $g_1 = g_2$  and when  $r = 1$  they are draws from different Bernoulli processes.

The assumption that performance is persistent and the fact that protesting is costly make two conclusions immediate. If  $g_1 = 1$  then the citizen will not protest and the government will endure for 3 periods providing good performance. Moreover, if the government is replaced and then  $g_2 = 1$  then the new government will not be replaced. Accordingly, the only interesting histo-

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<sup>7</sup>The interpretation here is that a government has a type (good or bad); if it is good it always works and if it is bad it never does.

ries are the two in which the previous government(s) has(have) provided poor performance and the citizen must decide whether to protest or not. Letting  $Q$  denote a probability that  $\pi = h$  held by a citizen in period 2, the expected payoff of protesting is  $Qh + (1-Q)l - c$  whereas the expected utility of retaining the incumbent performing at  $g_2 = 0$  (and thus  $g_3 = 0$ ) is 0.

The posterior probabilities for the relevant quantities conditional on histories of this form are given by Bayes' rule as follows.

$$\Pr(\pi = h \mid 0, 0, 0) = \frac{q(1-h)}{q(1-h) + (1-q)(1-l)} \quad (1)$$

$$\Pr(\pi = h \mid 0, 1, 0) = \frac{q(1-h)^2}{q(1-h)^2 + (1-q)(1-l)^2} \quad (2)$$

So observing two episodes of poor performance with replacement is a worse signal about  $\pi$ ,  $\Pr(\pi = h \mid 0, 0, 0) > \Pr(\pi = h \mid 0, 1, 0)$ . Accordingly, if protesting is a best response following poor performance and replacement then it is also a best response following poor performance and no replacement. Conversely, if protesting is not optimal following poor performance without replacement then it is also not optimal following poor performance with replacement. The intuition behind these conclusions rests on the fact that it is only when the citizen believes that it is sufficiently likely that a replacement will be of type  $g_t = 1$  that she is willing to suffer the costs of a protest. So the higher she believes the probability that  $\pi = h$  the higher is the net payoff to protesting. The relevant comparison following two failures and replacement is that a protest is optimal if

$$\frac{q(1-h)^2}{q(1-h)^2 + (1-q)(1-l)^2} \geq \frac{c-l}{h-l} \quad (3)$$

while the relevant comparison for two failures by the same government is

$$\frac{q(1-h)}{q(1-h) + (1-q)(1-l)} \geq \frac{c-l}{h-l} \quad (4)$$

Earlier in the paper, we have focused on the possibility that a citizen would find it worthwhile to protest early but then after observing poor performance she would chose not to protest. In order to investigate whether this pattern of behavior can be supported in this model (and if so under what conditions) we focus on the possibility that the citizen optimally decides not to replace a government following  $g_2 = 0$ , (specifically at the history  $(0, 1, 0)$ ). This requires that

$$\frac{q(1-h)^2}{q(1-h)^2 + (1-q)(1-l)^2} \leq \frac{c-l}{h-l}. \quad (5)$$

Following  $g_1 = 0$  the assessment is as follows. A protest involves cost  $c$  and then will either lead to  $g_2 = 1$  and  $g_3 = 1$  (and this occurs with probability  $\Pr(\pi = h | 0)h + (1 - \Pr(\pi = h | 0))l$  where  $\Pr(\pi = h | 0) = \Pr(\pi = h | 0, 0, 0)$ ). For now we call this quantity  $P$ . Alternatively with probability  $1 - P$  it will lead to  $g_2 = 0$  and  $g_3 = 0$ . Moreover, given that  $g_2 = 0$  the citizen will then decide not to protest (under the assumption in inequality 5) which implies that  $g_3 = 0$ . So the expected utility to protesting at this information set is  $Ph2 + (1 - P)l2 - c$ . Accordingly, protesting at this first history is optimal if

$$\frac{q(1-h)}{q(1-h) + (1-q)(1-l)} \geq \frac{\frac{c}{2} - l}{h-l} \quad (6)$$

Combining this condition and inequality 5 yields the following requirement for the citizen to protest following  $g_1 = 0$  but not following the history  $g_1 = 0$ , replacement and  $g_2 = 0$ ;

$$\frac{\frac{c}{2} - l}{h-l} \leq \frac{q(1-h)}{q(1-h) + (1-q)(1-l)} \quad (7)$$

$$\frac{q(1-h)^2}{q(1-h)^2 + (1-q)(1-l)^2} \leq \frac{c-l}{h-l} \quad (8)$$

These conditions can be rewritten as

$$\left( l + \frac{q(1-h)^2(h-l)}{(1-l)^2(1-q) + q(1-h)^2} \right) \leq c \quad (9)$$

$$c \leq 2 \left( l + \frac{q(1-h)(h-l)}{(1-l)(1-q) + q(1-h)} \right). \quad (10)$$

Inspection reveals that since the parameters,  $q, h, l$  are in  $[0, 1]$  the first term must be weakly smaller than the last term—indicating that values of  $c$  which satisfy these conditions exist. Namely there is a region of values of  $c$  for which the specified behavior by the citizen occurs in equilibrium. Of course the appropriate value of  $c$  may not fall in this interval.

One important observation is that when there is no aggregate uncertainty about the distribution from which governments are drawn—just uncertainty about the realization of any individual government—these inequalities reduce. In particular as  $h$  and  $l$  converge to  $z$  we have the following limit

$$z \leq c \leq 2z. \quad (11)$$

In particular, if the citizen can only learn about a particular government and not learn about future governments, the pattern of protesting in the first period and then deciding not to protest following another failure relies just on the fact that costly activity early has more value because there are more periods from which to gain from replacement. This type of rationale is less likely to persist in a model without an explicitly endpoint—i.e. an infinite horizon problem. Similarly if the citizen is myopic then the condition reduces to  $z \leq c \leq z$  and the existence of a cost that supports this pattern of behavior is "knife-edged".

On the other hand when there is uncertainty about the distribution governments are drawn from and the citizen can learn about this, the rationale for this pattern of behavior does not hinge on the fact that costly action is less profitable later in the game. In particular if the citizen is myopic in that at any period she only cares about policymaking in the next period the relevant constraint is

$$\frac{q(1-h)^2}{q(1-h)^2 + (1-q)(1-l)^2} \leq \frac{c-l}{h-l} \leq \frac{q(1-h)}{q(1-h) + (1-q)(1-l)} \quad (12)$$

which is equivalent to

$$\left( \frac{l}{h-l} - \frac{q(h-1)^2}{(l-1)^2(q-1) - q(h-1)^2} \right) (h-l) \leq c \quad (13)$$

$$c \leq (h-l) \left( \frac{l}{h-l} + \frac{q(h-1)}{q(h-1) - (l-1)(q-1)} \right) \quad (14)$$

Values of  $c$  exist that satisfy these inequalities if

$$\begin{aligned} \frac{q(h-1)^2}{q(h-1)^2 - (l-1)^2(q-1)} &< \frac{q(h-1)}{q(h-1) - (l-1)(q-1)} \quad (15) \\ \frac{1}{q(h-1)^2 - (l-1)^2(q-1)} (h-1) &< \frac{1}{q(h-1) - (l-1)(q-1)} \\ \frac{q(h-1)^2 - (l-1)^2(q-1)}{(h-1)} &> q(h-1) - (l-1)(q-1) \\ q(h-1) - \frac{(l-1)^2(q-1)}{(h-1)} &> q(h-1) - (l-1)(q-1) \\ -\frac{(l-1)^2(q-1)}{(h-1)} &> -(l-1)(q-1) \\ \frac{(l-1)}{(h-1)} &< 1 \\ l &< h \end{aligned}$$

This last inequality follows from the assumption that  $l < h$ . But if there is no aggregate uncertainty about the distribution from which governments are drawn ( $l = h$ ) and the citizen is myopic then no values of  $c$  satisfy the two inequalities (strictly).

## 5 Conclusions

In the aftermath of the Colored Revolutions, it seemed reasonable to imagine that a sea of change had arrived across a set of countries that had not previously enjoyed much of a reputation for democratic accountability. In the years that have past, this sunny future has been replaced by a much more complex, and some ways much more disappointing, reality. In this paper, we have explored one particular feature of that dynamic: the likelihood that citizens would take to the streets again in the future to protect democracy. What we hope to have demonstrated, both through our thought experiment and our formal model, is that this initial optimism may have been somewhat misplaced. Put another way, the "one-shot deal" scenario of the Colored Revolutions is indeed a realistic possibility and one that, to date, seems to be occurring in the real world. This is an important lesson to keep in mind as the world watches the current developments in Iran unfold.

We also hope to make a modest contribution to the formal literature, which has hitherto focussed primarily on the adverse selection issues confronting citizens when choosing to vote governments out of office in regularly scheduled elections. As large proportions of the world continue to live under political systems that do not afford them a legitimate opportunity to actually "throw the bums out" in elections, it is important that the literature consider other means that citizens have at their disposal for doing this outside of the context of free and fair elections. Our approach highlights four factors that can make continued protest in the long run less likely. Two of these are fairly obvious: good

governance can remove the necessity for protest in the future, and changing the cost of protesting - a lesson apparently not lost on the Revolutionary Guard and Basij militia in Iran - can reduce individuals' willingness to participate in protests.

The other two factors, however, are less obvious, and prove important in the workings of our model. First, we demonstrate how those with a less myopic view of current events may be more willing to protest, which suggests an interesting avenue for future research, and in particular provides an explanation for the prevalence of young people participating in protests. Second, we highlight the learning that occurs when a new government comes to power. Particularly when voters have only experienced one government previously - as was the case in our game, and, in a sense, in the post-communist countries undergoing the Colored Revolutions - this learning can be rather dramatic. To put it bluntly, when citizens have only experienced one crappy government, protesting to let another government come to power. But when they've got through that process and all they've gotten is another crappy government, their willingness to do so again may be greatly diminished. A disturbing implication of this finding is that all the squabbling that's gone on between Timoshenko and Yushchenko in Ukraine in recent years may not just be harming Ukraine's democratic development in the present, it may actually be striking a pretty serious blow on the country's democratic development in the future. Something to keep in mind for victorious forces in Colored Revolutions still to come.

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