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COLLECTIVE MEMORIES, PROPAGANDA AND AUTHORITARIAN POLITICAL SUPPORT

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Collective Memories, Propaganda and Authoritarian Political Support*

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Abstract

Can experience with democracy affect political support for a dictator? We develop a political economy model with endogenous reference points, where a dictator strategically reactivates traumatic collective memories about a past experience with democracy, to convince the population that a democratic alternative is inferior to the autocratic status quo. We find that a more traumatic experience with democracy in the past renders propaganda more efficient and increases the level of authoritarian political support per unit of memory recollection. We support these findings with cross-country evidence from 165 countries.

JEL Classification: D74, D83, P16, Z13.

Keywords: collective memory, propaganda, political support, authoritarian politics, private investment.

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1 Introduction

During most of the 20th century, violent repression was the method of choice used by dictators and autocrats to stay in power. In the early 21st century, however, technological progress and an increasingly interconnected world increased the costs of using large-scale violence. Dictatorships had to adopt to these new circumstances if they wanted to survive without isolating their countries from global markets. As a consequence, a new type of authoritarian regimes emerged that focus on propaganda and sophisticated methods of information manipulation, rather than relying on violence and ideology (Guriev and Treisman 2015). According to Guriev and Treisman, propaganda is no longer used to introduce a new view of the world in these regimes, but simply as a means to convince the population that the dictator is competent. If a majority of citizens infer that the dictator is incompetent, they rise up and overthrow him in a revolution.

A central premise in the recent literature on endogenous political transition (see e.g. Acemoglu and Robinson 2006) is that the political reference point of the population is a democratic regime that is always valued more than a dictatorship led by an incompetent dictator. However, the rise in popular support for authoritarian politicians across the world suggests that democracy has lost at least some of its attractiveness as a political reference point in recent years. Indeed, existing survey data indicate a lot of variation in the level of support for democratic institutions across the world. For example, question E235 of the World Values Survey (WVS) asks respondents to evaluate "*how important it is for you to live in a country that is governed democratically*," on a scale from 1 to 10. While the fraction of respondents for whom democracy was absolutely important (i.e. E235 = 10) was 0.44 in 2010, the cross-country distribution shows a substantial variation around the mean (see Figure 1, where the horizontal red line depicts the worldwide average). Whereas in Sweden two-thirds of the population indicate that living in a country that is governed democratically is of absolute importance to them, the number

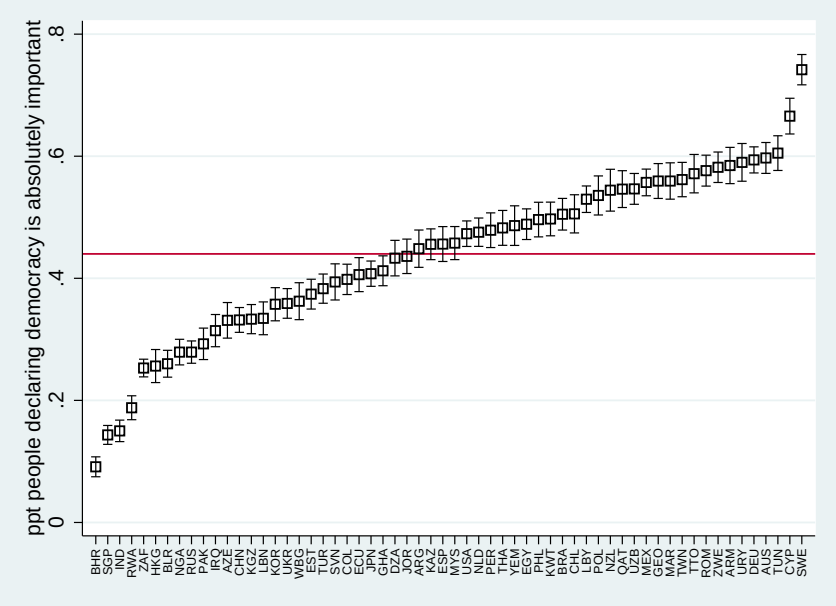

Figure 1: Cross country distribution of the fraction of people declaring democracy is absolutely important (WVS question E235 = 10). The horizontal red line depicts the worldwide average.

is as low as 10% for respondents in Bahrain, remains below 20% for people living in Singapore, India and Rwanda, and below 30% for respondents in South Africa, Hong Kong, Belarus, Nigeria, Russia or Pakistan. Why do we have this large variation in preferences for democracy across the world?

In this paper, we argue that these political preferences may—at least partially—be the result of targeted propaganda campaigns in authoritarian states, with the aim to discredit Western-style, competitive democratic institutions in the eyes of the population. Dictators may manipulate information and use propaganda not only to convince the population that the dictator is competent (as in Guriev and Treisman 2015), but also to emphasize that the political status quo is superior in relative terms to the potential political alternative that is used as political reference point by the citizenry. In other words, the dictator will try to convince the population that the status quo (the autocratic political regime) is superior to the political reference point (democracy), with the help of propaganda. Citizens, in turn, will compare their expected utility under a po-

tential democratic regime with their utility under the autocratic status quo. If a critical proportion of the population becomes convinced that the political reference point does not offer a higher level of utility than the political status quo, the threat of a popular uprising disappears.

In a companion paper (Belmonte and Rochlitz, 2018), we provide empirical support for this hypothesis by showing how Russia's ruling elites use state-controlled media to strategically recall memories from the economically disastrous, but politically liberal transition period that Russia underwent during the 1990s. These memories are then equated with "Western style democracy," while the relative economic and social stability after the year 2000 is attributed to the hybrid autocratic regime created by Vladimir Putin. In the paper, we show how the recollection campaign has a significant and positive effect on political support for Vladimir Putin, and how it helped to lower the desire of the Russian population for a transition to a more competitive pluralistic regime.[1]

While Russia under Putin is a particularly good example to illustrate our theory, similar patterns can be identified for other authoritarian states in the early 21st century as well. In Myanmar, Pakistan or Egypt, for example, the military tried to justify the overthrow of competitively elected governments by maintaining that too much political competition had led to instability and chaos, or was putting the integrity of the country at risk.[2] In Hungary, media outlets controlled by the government of President Viktor Orban made Western liberal democracy responsible for the refugee crisis, claiming "that Western European countries are facing 'civil war conditions' as a result of migration."[3] The Hungarian government party Fidesz, on the other hand, is presented as a bulwark

[1]Note from Figure 1 that according to the WVS, only about 30% of the Russian population find democracy to be of absolute importance.

[2]In Myanmar, the military junta (SLORC) did not recognize the result of the general election of 1990, and continued to govern until 2011. Similarly, in Pakistan General Pervez Musharraf overthrew the government of Prime Minister Nawaz Sharif in 1999, and ultimately remained in power until 2008. In Egypt, competitive elections as a result of the 2011 Arab Spring were won in 2012 by Mohamed Morsi from the Muslim Brotherhood, who was overthrown in a military coup by General Abdel Fattah el-Sisi in 2013.

[3]https://www.politico.eu/article/viktor-orban-media-empire-hungary-election-antal-rogan-fidesz-propaganda/

against excessive political liberalism and the associated chaos and disorder. The government of Belarus similarly compared competitive but chaotic politics in neighboring Ukraine with the less competitive but stable status quo at home.[4]

In this paper, we provide a formal framework to illustrate our theory, as well as additional cross-country evidence to show that our findings also hold more generally. We build a two-period model where an autocrat prevents a revolution by convincing the population, through propaganda, that their political reference point is economically inferior to the autocratic status quo. In period 1 of our model, the autocrat decides how much of the disposable resources to invest in propaganda, and how much to invest in the production of a public good. Citizens, in turn, decide how much to produce and whether to revolt (and move to a democratic regime) or to support the autocrat (and remain in the status quo). In period 2, payoffs are distributed according to the regime to which the polity transited.

Investments into propaganda reduce the willingness of the population to revolt. They also come with a cost, however, as propaganda diverts resources from investment into a productive public good, which—following Barro (1991) and Barro and Sala-i-Martin (1992)—complements private investment in our framework. Propaganda is thus a purely unproductive investment, representing an economic opportunity cost for the population at large, but also for the dictator himself. In our model, the autocrat thus faces an inter-temporal trade-off, as investment in propaganda, while increasing the chances of remaining in power in period 2, also reduces the rents the autocrat expects to obtain in period 2.

In equilibrium, the autocrat compares the marginal benefit of propaganda—a reduction in the relative attractiveness of the political reference point—with its marginal cost, i.e. the loss in tax revenues resulting from lower levels of investment. The optimal level

[4]See e.g. *The Guardian*, 14.08.2014, "Lukashenko's popularity in Belarus on the rise: Violence in neighbouring Ukraine has enhanced presidents standing as voters choose stability over change" https://www.theguardian.com/world/2014/aug/14/-sp-belarus-lukashenko-popularity-ukraine

of propaganda leaves the population indifferent between the autocratic status quo and a move to a democratic regime. The autocratic regime remains in place, but at the cost of a reduction in welfare for the population.

Our model uses several sources of variation to explain differences in the extent that propaganda is needed to keep the autocrat in power. We first look at the *salience* of a collective memory featuring a past traumatic experience with democracy, which we operationalise by the number of people that hold such a memory. We then also look at the *intensity* of the trauma, which we define by the economic loss that the people who lived through the period experienced. Taken together, we find that in autocracies where more people experienced more intense periods of competitive but unstable politics in the past, it is less costly for the dictator to reactivate negative collective memories in order to lower the desire of the population for political change.

The strategic manipulation of political beliefs by the selective reinforcement of collective memories offers an explanation why some authoritarian regimes enjoy high popularity and remain in power longer than other comparable regimes, despite having lost the ability to deliver economic benefits to the population.

We corroborate our findings with empirical cross-country evidence from 165 countries. Using data from 2000 to 2015 on the control of the media around the world, we show that the propaganda effort in autocracies is 25% higher than in democracies. However, those autocracies that have experienced a democratic but chaotic regime in the past exert a 15% additional propaganda effort compared to otherwise similar autocracies. We also find that in autocracies where the autocratic regime was preceded by a chaotic but competitive regime, the share of people considering democracy to be of absolute importance is 17.7% lower than in the other group. While we do not pose any causal emphasis on these results, we find that these correlations are robust to controlling for GDP per capita, population, military expenditure, foreign direct investment, as well as proxies of international and domestic political pressures and other country characteristics

that may explain variation in democratic values.

After a brief review of the literature in Section 2, we illustrate the fundamentals of our model as well as the equilibrium in Section 3. Section 4 analyzes the results of our model. Section 5 presents empirical cross-country evidence in support of our results, and Section 6 concludes.

2 Related literature

Our paper relates to several strands of literature. First and foremost, it connects with a number of recent papers on the economic implications of memory selection (e.g., Bénabou and Tirole, 2002; Mullainathan, 2002; Gennaioli and Shleifer, 2010) and on the optimal selection of *collective* memories (Dessí, 2008). Specifically, Dessí (2008) finds that in culturally homogeneous societies it can be optimal, from an economic point of view, to focus on the inter-generational transmission of positive collective memories, while negative memories are suppressed, as investment decisions are based on beliefs about the quality of institutions.[5] In this paper, we show that this process may also be driven by the interest of an autocrat in power who optimally recalls negative memories that are associated with a past experience of competitive but chaotic politics, in order to convince the population that democracy is worse than the autocratic status quo.

Along similar lines, our work also connects to a literature on the political economy of beliefs formation (Lott, 1999; Alesina and Angeletos, 2005; Saint-Paul, 2009; Aghion, Algan and Cahuc, 2011). In these models, governments invest in the strategic manipulation of information, to change the future preferences and beliefs of their citizens. Our work extends this idea by looking at the incentives of an autocrat to manipulate beliefs

[5]This finding matches with previous work carried out by historians, sociologists and psychologists to study the ways in which societies remember, represent and interpret the past. See e.g. Olick and Robbins (1998) for a survey, or Olick et al. (2011) for a comprehensive collection of writings on the topic.

about the political reference point of the population—a competitive democratic regime.

Specifically, our paper looks at the optimal strategy an autocrat can use to increase the probability of remaining in power (Wintrobe 1990, 2007). While previous research has focused on economic redistribution (Acemoglu and Robinson 2006), repression (Levitsky and Way 2010; Escriba-Folch 2013), performance (Zhao 2009) or competence of the autocrat (Guriev and Treisman 2015), we focus on the use of propaganda to strategically influence how the population thinks about potential alternatives to the political status quo.[6]

With respect to the content of propaganda, leaders might sometimes have incentives to misrepresent the true state of the world in order to make coordination among their supporters more likely. In a series of experiments, Dickson (2010) shows how followers often appear to not fully account for their leaders' strategic incentives to misrepresent the world in forming their posterior beliefs. A strong propaganda machine can therefore be a powerful tool in the hands of a leader who intends to influence the way the population perceives the world. Conversely, too much transparency, for instance by regularly releasing economic information, can lead to a higher probability of protests in authoritarian regimes (Hollyer, Rosendorff and Vreenland 2015).

The performance of a propaganda machine, and in that the ability to influence popular beliefs increases with control over the media. As shown by Gehlbach and Sonin (2014), media bias tends to be greater and state ownership of the media more likely when the government has an interest in mobilizing citizens into a direction that is not necessarily in the citizens' individual best interest. An increasing monopoly over the media and sources of information increases asymmetries of information between the ruler and the population (Gehlbach, Sonin and Svolik 2016), which then can be strategically exploited by the autocrat to influence popular beliefs. In our paper, we show how tighter control

[6]In this respect, our paper also connects with a recent paper by Edmond (2013), where the elite in power uses a signal-jamming technology to shift the mean of the distribution from which individuals draw their information in order to convince people that the regime in power is difficult to overthrow.

over the media in combination with a previous experience of competitive but chaotic politics can result in the population having a worse perception of democracy than in otherwise comparative countries, as control over the media is used to misrepresent the true utility resulting from a pluralistic democratic regime.

Our study also relates to the literature on loss aversion in politics and reference-dependent preferences. Similar to Kahneman and Tversky (1979) and Alesina and Passarelli (2015), the population in our model prefers a certain but autocratic status quo to a democratic future, if enough people believe that the democratic future will be economically and politically unstable. As in Koszegi and Rabin (2006), the preferences of the population depend on a reference point, which in our case is the true nature of democracy. The way people perceive this reference point can be strategically shaped by the dictator with the help of propaganda. In our model, the dictator's ability to convince a sufficiently large part of the population that the true nature of democracy is unstable depends both on the intensity of propaganda, and on collectively held memories about a previous experience with competitive democratic politics.

Finally, our paper also contributes to a group of papers on the determinants of how people perceive democratic institutions. A well-established strand of the literature has looked at the effect of economic development on democratization (Lipset 1959, Treisman 2015). More recently, researchers have looked at emancipative mass attitudes (Welzel 2007) or the effect of individualistic vs collectivist culture (Gorodnichenko and Roland 2015) on preferences for democratic institutions. We contribute to this literature by considering the effect of traumatic past experiences with democracy.

3 Model

3.1 Set-up

To formalize our theory, we build a political agency model with a constituency of citizens, normalised to unity, and an autocrat in power. The game is played for two periods. In period 1 the autocrat is in power, and at the end of period 1 citizens decide whether to support the autocratic regime or to overthrow the ruler by initiating a successful revolution. If no revolution takes place, the autocrat will remain in power in period 2 and benefit from rents R. In case of a popular revolt, the political regime transits to a democracy. We assume that players do not discount the pay-offs obtained in period 2.

Denote y as the national income produced in period 1. To obtain y units of income, the representative citizen employs both private resources, say k units of physical capital, and public amenities, say g^A units of the public good, where the superscript A indicates that the public good is provided under an autocratic regime. Hence, the production function under an autocratic regime is $y = Y(g^A, k)$. Public amenities facilitate the productivity of physical capital and enter complementarily in $Y(\cdot)$. The complementarity between g^A and k means that the cross derivative of $Y(\cdot)$ is positive (Barro 1991, Barro and Sala-i-Martin 1992) and serves to explain why citizens will stop supporting the autocrat if they think their productivity is too low as the result of an inefficient state—in a framework in which political values are absent. For convenience, we set $y = g^A k$.

The units g^A of the public good are determined in equilibrium by the autocrat in the following way. Assume the government is endowed with an amount of revenues given by T.[7] Further assume (following North, Wallis, and Weingast, 2009) that autocracy suffers from a systemic source of inefficiency: in order to secure his hold on power, the autocrat needs to co-opt the elite by transferring to them a fraction $\mu \in (0, 1)$ of T.[8] The units

[7] T may result from natural resource rents or tax revenues collected in the previous period.

[8] Ideally, autocracies around the world may be ranked according to μ, and those with a higher need

of disposable revenues for producing g^A are then given by $(1-\mu)T$.

Alongside intra-elite competition, the autocrat's power is also threatened by popular revolts. We take the co-optation process as given, and focus on the decision of the autocrat to invest part of the disposable resources, $(1-\mu)T$, in propaganda, to reduce the probability of revolts. We define $\gamma \in [0,1]$ as the fraction of resources spent on propaganda. Therefore, the autocrat invests $\gamma(1-\mu)T$ on the manipulation of beliefs and $(1-\gamma)(1-\mu)T$ to provide g^A. To differentiate our mechanism from Guriev and Treisman (2015), we assume that the autocrat is competent and will not waste public resources unproductively. Finally, we also assume that the autocrat cannot issue debt to finance the budget.[9]

The autocrat values private rents. Rents R are composed by the tax revenues collected in period 1 from private citizens, at the given rate τ, which are at the disposal of the dictator in period 2. As such, their availability is contingent on whether he succeeds in remaining in power. When the regime remains in the status quo (i.e., $\phi = 0$), the continuation value of the autocrat is therefore R. In the case of a transition to democracy (i.e., $\phi = 1$), the autocrat is overthrown and loses a fraction $(1-\theta)$ of R, with $\theta \in (0, \bar{\theta})$.[10] In period 1 he therefore maximises his value function by choosing the optimal level of γ:

$$\mathcal{V} = \max_{\gamma}\{[1-(1-\theta)\phi]R\}. \tag{1}$$

An important feature of our model is that propaganda is purely unproductive and economically costly.[11] An increase in γ results in a contraction of g^A, eventually reducing

for co-optation show higher budget constraints (i.e., a higher μ). See North, Wallis, and Weingast (2009).

[9]The autocrat's budget constraint is then naturally binding and equal to $(1-\mu)T = (1-\gamma)(1-\mu)T + \gamma(1-\mu)T$.

[10]The introduction of θ captures the idea of an elite capturing process after an institutional transition as in Acemoglu and Robinson (2008) and Acemoglu, Ticchi, and Vindigni (2010). Moreover, the upper bound on θ is set so as to guarantee that, if preventing the rebellion is an admissible strategy, the autocrat weakly prefers to stay in power.

[11]The joint cost of producing the public good and propaganda is set to 1, in order to emphasise the relative opportunity cost that the ruler faces when deciding to invest in propaganda rather than in a

y and making the citizens relatively poorer. Along with this social cost, the autocrat also experiences a private cost that originates from the tax collection process. Because of the reduction of y less taxes will be collected (for the same level of τ). At the same time, however, propaganda reduces the threat of a rebellion, by making citizens more likely to support the status quo.

Under autocracy, citizens take two decisions. They decide to initiate a revolt, i.e. to play $\phi = \{0, 1\}$, and to invest k units of capital in private activities. The motivation to revolt (i.e., $\phi = 1$) is purely economic in our framework, with the population deciding to revolt to establish a democracy if they expect to have higher incomes under a democratic regime.[12] We also assume, for simplicity, that rebellion is costless. This setting ensures that the popular threat is highly credible, inducing the autocrat to look for popular support.

People care about the political regime because different political institutions provide them with different amounts of the productive public good. This, in turn, induces variation in the utility people can get under different political regimes, which in our framework motivates the decision to revolt. In autocracy, the utility function of the representative citizen is therefore given by the difference between the disposable income y, after having payed taxes at a constant rate τ, and the convex cost of producing k units of capital, as follows:

$$\mathcal{U}^A = (1-\tau)(1-\mu)(1-\gamma)Tk - \frac{1}{2}k^2, \tag{2}$$

where production is expressed as $y = g^A k = (1-\mu)(1-\gamma)Tk$.

While living under an autocratic regime, citizens form their expectations about a

productive public good.

[12]The inclusion of intrinsic political motivations, such as, for example, democratic values, in addition to extrinsic motivations only further strengthens our mechanism by rising the threat for the autocrat. On democratic values and on their evolution among different regimes, see e.g. Ticchi, Verdier, and Vindigni (2013) and Besley and Persson (2017).

potential political alternative, their political reference point. The political reference point might be good or bad or a combination between the two. It could represent a well-functioning democratic regime (D) or a pluralistic but chaotic regime ($\tilde{D}$). We assume that transparent democratic institutions eliminate the need for propaganda, so that $\gamma = 0$. We also assume that because of free elections the participation cost to politics is zero, and redistribution takes place among all segments of the population.[13] We therefore set, for simplicity, $\mu = 0$, i.e. no within-elite redistribution under democracy.[14] Denoting g^D as the amount of the productive public good provided in democracy, the production by citizens is therefore $y = g^D k = Tk$ and the associated utility function is

$$\mathcal{U}^D = (1-\tau)Tk - \frac{1}{2}k^2. \tag{3}$$

As the well-functioning democratic regime (D), the pluralistic but chaotic regime ($\tilde{D}$) features democratic decision-making processes which reduce μ to zero. It is also characterized, however, by the partial absence of the rule-of-law, resulting in substantial economic inefficiency, which we capture by $\xi \in (0,1)$. Specifically, we assume that a fraction ξ of private production is destroyed.[15] Therefore, under the chaotic regime, people produce $y = Tk$ but get $(1-\tau)(1-\xi)y$. Their utility function is equal to

$$\mathcal{U}^{\tilde{D}} = (1-\tau)(1-\xi)Tk - \frac{1}{2}k^2. \tag{4}$$

Finally, note that by construction $\mathcal{U}^D \geq \mathcal{U}^{\tilde{D}}$ and $\mathcal{U}^D > \mathcal{U}^A$.

[13] These two assumptions are of course simplistic and, to some extent, unreal. However, they simplify both notation and computation. In theory, to produce the results we find we would only need to assume that the amount of propaganda and within-elite redistribution under democracy is lower than under autocracy.

[14] To focus on our focal mechanism, we hold the values for all other economic factors fixed. Taxes (τ) are therefore set the same in autocracy and democracy, as is the initial amount of public resources available (T).

[15] While we focus on large variation in ξ that may give rise to trauma, to some extent, it could also be interpreted as the incompetency of the democratic elected ruler.

3.2 Collective memory and propaganda

The constituency we consider experienced a disruptive political trauma in the past. Specifically, citizens have lived under $\tilde{D}$ before transiting to A, the current autocratic status quo. This traumatic experience is embodied in the society's collective memory.

We model this by assuming that a fraction $\lambda \in [0, 1]$ of people exists that hold a latent negative memory of democracy. These people are sensitive to propaganda campaigns aimed at recalling the traumatic past. Variation in λ may be driven, for instance, by direct experience: in many former communist states, the older generation has had a direct experience of the transition period that occurred in the 1990s, while people born in the late 1990s and afterwards do not remember the period directly. In this case, λ would stand for the fraction of the population that experienced the 1990s, over the total population.

λ is a key parameter in our model. It reflects the magnitude of the potential return of propaganda. To see this, note that the expected value under the political reference point in the constituency is a convex combination between $\mathcal{U}^D$ and $\mathcal{U}^{\tilde{D}}$:

$$\lambda \mathcal{U}^{\tilde{D}} + (1 - \lambda)\mathcal{U}^D. \tag{5}$$

If for illustrative purposes $\lambda = 1$, the entire population is potentially influenceable by a campaign recalling the past trauma. Changes in $\mathcal{U}^{\tilde{D}}$ would then reflect one-to-one on changes in the expected value the constituency holds about democracy. If, on the other hand, $\lambda = 0$, propaganda would be ineffective.

Importantly, while $\mathcal{U}^D$ is fixed in Equation 5, the autocrat can affect $\mathcal{U}^{\tilde{D}}$ by reactivating the trauma. In other words, he can transform collective memories into *negative* collective memories by reactivating them.[16] Reactivation works through propaganda

[16]The reactivation of memories is a long-standing subject in psychology. Recently, psychologists have developed the so-called *fading effect bias* theory (see e.g. Walker et al. 2003), according to which individuals remember a past experience, but tend to forget the negative content of that particular experience, unless it is specifically recalled. Note that in our notation this implies that if $\gamma = 0$ then

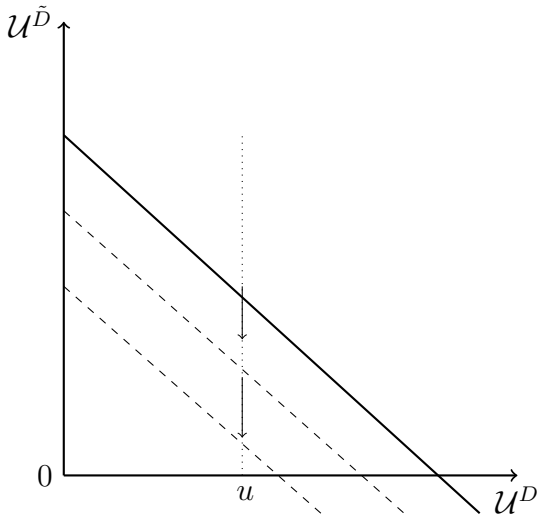

Figure 2: The effect of an increase in propaganda on the expected value attached to democracy.

that transforms ξ units of latent memory about the chaotic past into $\tilde{\xi} = a\gamma\xi$ units of reactivated memory, where $a > 1$ is the marginal return of investing into propaganda. Higher values of a make the recollection more efficient. The expected utility citizens derive from the chaotic regime, after the collective memory has been reactivated, is then as follows:

$$\mathcal{U}^{\tilde{D}} = (1-\tau)(1-a\gamma\xi)y - \frac{1}{2}k^2. \tag{6}$$

Note that $\mathcal{U}^{\tilde{D}}$ is now a function of γ, the fraction of disposable resources invested in propaganda. In Figure 2 we illustrate how variation in γ can explain variation in the expected value the constituency hold about democracy. Specifically, Figure 2 maps a family of indifference curves of the function in Equation 5, for different values of $\mathcal{U}^{\tilde{D}}$ and $\mathcal{U}^{D}$ and for an intermediate value of λ (note that λ gives the slope of each curve). $\mathcal{U}^{D}$ is fixed to u. Through the vertical line, with value u, the constituency can move down to a lower expected value attached to democracy when the autocrat increases γ. In the next section, we now derive the optimal value of γ that makes people indifferent between

$\mathcal{U}^{\tilde{D}} = \mathcal{U}^{D} > \mathcal{U}^{A}$.

staying in the status quo and moving to a democratic regime.

3.3 Timing of events and equilibrium

All actions are undertaken by the ruler and the citizens in the first period according to the following timing:

- Period 1

  S1 The political regime is an autocracy. Disposable resources are given from the previous period and from the type of the autocratic regime.

  S2 The ruler decides how much to invest in propaganda, γ.

  S3 Citizens invest the optimal level of physical capital k and produce y. Given the production they pay taxes, τ.

  S4 Citizens realise the level of collective memory and decide whether to initiate a revolution, ϕ.

- Period 2

  S5 The ruler obtains his rents R if the revolution is not initiated. If the regime transits, he obtains only a fraction θ of R.

We look for the pure strategy perfect equilibrium. Below we solve the model by backwards induction.

4 Analysis

4.1 Period 2

In period 2 the game ends. If the revolution took place, the autocrat loses power and retains only a fraction $(1 - \theta)$ of his autocratic rents. If still in power, the autocrat

does not make any public investments, but appropriates the *entire* tax revenue T_2 that has been collected from the citizens at the end of period 1. His lifetime flow of rents is therefore given by $R = T_2$.

4.2 Collective memory and revolutionary threat

At the end of period 1, the citizens decide whether to initiate a revolution or to support the status quo. Taking γ and k as given at this stage, they will support autocracy—playing $\phi = 0$—if they expect to be richer in autocracy than under their political reference point. In other words, they will support the status quo if the utility they get under an autocratic regime is higher than what they expect to have under their political reference point:

$$\mathcal{U}^A \geq \lambda \mathcal{U}^{\tilde{D}} + (1 - \lambda)\mathcal{U}^D. \tag{7}$$

Accordingly, the way in which the collective memory is reactivated is key for the political process.[17] In Proposition 1 we show that when the collective memory is intense enough, the population will support the status quo.

Proposition 1 *Citizens support the autocratic regime (i.e. $\phi = 0$) if and only if $\lambda \geq \lambda^\dagger$, where*

$$\lambda^\dagger(\gamma) \equiv \frac{\mathcal{U}^D - \mathcal{U}^A(\gamma)}{\mathcal{U}^D - \mathcal{U}^{\tilde{D}}(\gamma)}. \tag{8}$$

Proof. In the text. ∎

Note that $\lambda^\dagger$, in Equation 8, is the critical mass of people that have to be targeted by propaganda to avoid a successful revolt. $\lambda^\dagger$ is indeed a function of γ through both $\mathcal{U}^{\tilde{D}}$ (cf. Equation 6) and $\mathcal{U}^A$ (cf. Equation 2). Furthermore, note that this mass is reachable (i.e. no larger than 1) if $\mathcal{U}^A \geq \mathcal{U}^{\tilde{D}}$. Therefore, the status quo must not be economically

[17] Note that we assume that the condition holds even if the two sides of Equation 7 are equal. Implicitly we assume that revolting is costly enough for the citizens to remain in the status quo if their expected utility under the status quo equals that under the reference point.

inferior than the worst possible alternative for the autocrat to stay in power. Conversely, citizens would rebel for any value of λ.

4.3 Optimal private investment under different political regimes

At stage S3, citizens decide how many units of physical capital k to invest, while taking as given the fraction of disposable resources devoted to indoctrination, γ. Each citizen then maximizes his value function (2) by choosing the optimal k, as follows:

$$\max_{k} \quad (1-\tau)(1-\mu)(1-\gamma)Tk - \frac{1}{2}k^2. \tag{9}$$

Investing is costly, and due to convex costs the maximization problem admits a unique solution. We define the optimal units of capital to invest in the production of y in the autocratic regime as $\hat{k}^A$. Similarly, we define $\hat{k}^D$ and $\hat{k}^{\tilde{D}}$ as the potential alternative optimal stocks of capital that citizens would have invested in a democracy or in the chaotic regime, respectively. Solutions are illustrated in Lemma 1.

Lemma 1 *Citizens invest* $\hat{k}^A = (1-\tau)(1-\mu)(1-\gamma)$ *in autocracy; invest* $\hat{k}^D = (1-\tau)T$ *in democracy;* $\hat{k}^{\tilde{D}} = (1-\tau)(1-a\xi\gamma)T$ *in the chaotic regime.*

Proof. See Appendix B. ∎

By construction, under democracy citizens are the most productive and, holding everything else equal, invest the most (comparing $\hat{k}^D$ with $\hat{k}^A$ and $\hat{k}^{\tilde{D}}$). The comparison between $\hat{k}^A$ and $\hat{k}^{\tilde{D}}$ is however hard to discern a priori, as both are affected negatively by the propaganda carried out by the autocratic regime, a decision that the autocrat takes at stage S2.

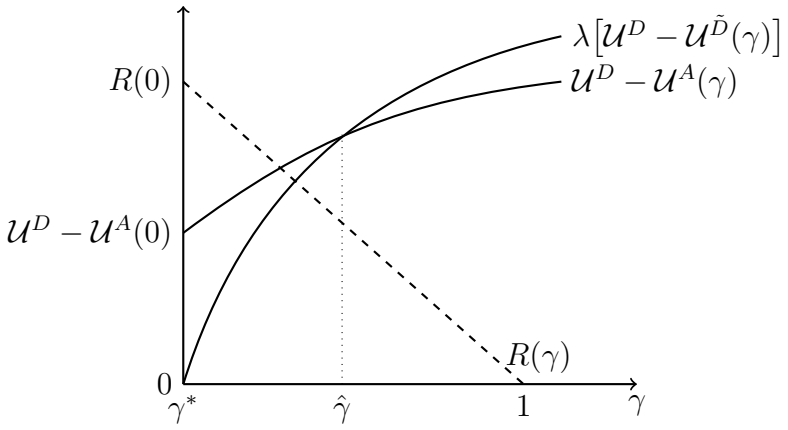

Figure 3: First best, γ^*, and second best, $\hat{\gamma}$, equilibrium.

4.4 Optimal recollection of negative collective memories

At the stage S2 of the game, the autocrat anticipates the credible threat of a popular revolt, as well as the post-tax income of the citizens. As explained in Section 4.2, the threat can be relaxed either by making the status quo more attractive (i.e., by pushing up $\mathcal{U}^A$) or by reducing the expectations people have about the political reference point they will reach if the autocracy is overthrown (namely, by pushing down $\mathcal{U}^{\tilde{D}}$ as we illustrate in Figure 2). Note, however, that even if the autocrat is genuinely competent, the amount of public goods provided (i.e., g^A) will always be lower than what the population could get in democracy (i.e., g^D). The source of inefficiency in our model is therefore not competence, but results from the process of co-optation that the autocrat needs to carry out among the elite to secure his hold on power. In other words, as $\mu > 0$, a positive amount of propaganda is necessary to stay in power.

Propaganda is costly for the autocrat, however, as it diverts resources from investment into the productive public good, making citizens less productive and relatively poorer. We illustrate this point in Figure 3, which provides a graphical intuition of the solution (we refer to the first best equilibrium as γ^* and to the second best equilibrium as $\hat{\gamma}$). The dashed line represents the rents that the autocrat expects from remaining in power

in period 2, $R(\gamma)$. It monotonically decreases as γ increases, so that the first best solution is a corner solution in which $\gamma^* = 0$. At $\gamma^* = 0$, $\mathcal{U}^D = \mathcal{U}^{\tilde{D}}$ while $\mathcal{U}^D > \mathcal{U}^A$, as $\mu > 0$. From Equation (8) it follows that $\gamma^* = 0$ can not be a stable equilibrium, as in this point citizens revolt. As γ departs from γ^*, two simultaneous effects occur. First, as recollection is a costly activity the autocrat has to reduce the provision of g^A, which in turn makes the representative citizen less productive and poorer. As a result of this process, $\mathcal{U}^A$ decreases, resulting in an increase in the distance between $\mathcal{U}^D$ and $\mathcal{U}^A$, depicted by the first curve. Second, propaganda reactivates negative collective memories. This lowers $\mathcal{U}^{\tilde{D}}$, enlarging the distance between $\mathcal{U}^D$ and $\mathcal{U}^{\tilde{D}}$, depicted by the second curve in Figure 3. While the two curves are both concave, the first is flatter when μ is small enough—a point we will explore below. The only feasible solution $\hat{\gamma}$ is obtained when the curve $\lambda\left[\mathcal{U}^D - \mathcal{U}^{\tilde{D}}(\gamma)\right]$ crosses the curve $\mathcal{U}^D - \mathcal{U}^A(\gamma)$ from below.

Formally, $\hat{\gamma}$ is the result of the maximisation of (1), subject to the threat of rebellion.[18] We can now rewrite (1), using Proposition 2, as follows:

$$\max_{\gamma} \quad R(\gamma) = \tau(1-\tau)(1-\mu)^2(1-\gamma)^2T^2 \quad \text{s.t} \quad \lambda \geq \lambda^{\dagger}(\gamma). \tag{10}$$

Solving Equation 10 one obtains the optimal fraction of resources that the autocrat invest in the equilibrium (the solution is shown in Appendix A):

$$\hat{\gamma}(\lambda, \xi, a, \mu) = \frac{\mu}{\lambda a \xi - (1-\mu)}. \tag{11}$$

In Proposition 2 we summarize this result, while in Corollary 1 we show that the autocrat overinvests if threatened by a revolt.

Proposition 2 *Under a revolutionary threat, the autocrat recalls $\hat{\gamma}(\lambda, \xi, a, \mu)$ units of a traumatic past event, in equilibrium, and produces $\hat{g}^A(\lambda, \xi, a, \mu)$ units of the public good.*

[18]Note that since θ is small enough (i.e., $\theta \in (0, \bar{\theta})$) the autocrat always has an incentive to remain in power in period 2. This means that his value function includes the continuation value from remaining in power conditionally on the non-rebellion condition.

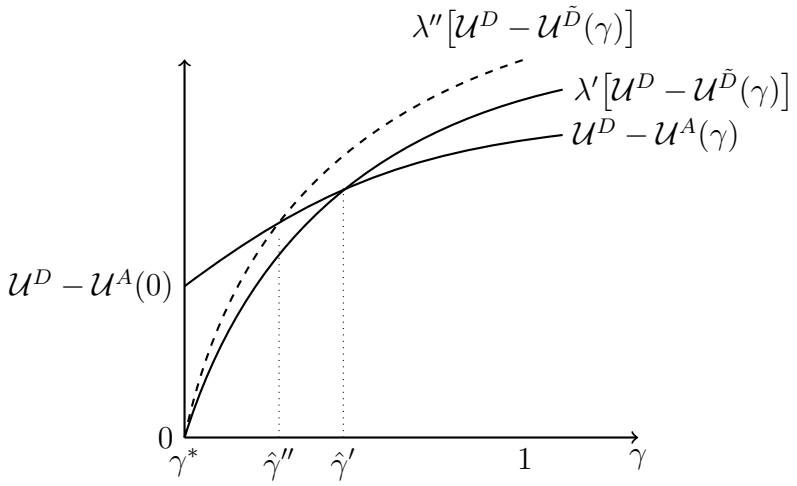

Figure 4: An increase in salience of the past from λ' to λ'' moves the optimal fraction of the budget spent on propaganda leftward , from $\hat{\gamma}'$ to $\hat{\gamma}''$.

The representative citizen employs $\hat{k}^A(\lambda, \xi, a, \mu)$ *units of capital and does not revolt, i.e.* $\hat{\phi} = 0$.

Proof. See Appendix A. ∎

Corollary 1 *Under a revolutionary threat, the autocrat overinvests in propaganda, i.e.* $\hat{\gamma} > \gamma^* = 0$.

4.5 Comparative statics

In the previous section, we have documented that in equilibrium the autocrat spends a fraction $\hat{\gamma}(\lambda, \xi, a, \mu)$ of the budget on propaganda to recall a past traumatic experience with democracy, $\tilde{D}$. We now study how $\hat{\gamma}(\lambda, \xi, a, \mu)$ moves as λ, ξ, a, or μ move as well.

An increase in the salience of the past. A shift in the salience of the past, λ, only affects the way the community might remember that particular past event. If the past trauma is more salient, more people hold the latent collective memory so that less resources are needed to recall the same units of memory. In other words, following a shift from λ' to λ'', the recollection technology becomes more efficient. We illustrate this

exercise in Figure 4 where the shock under scrutiny determines an upward rotation of the curve $\lambda\left[\mathcal{U}^D - \mathcal{U}^{\tilde{D}}(\gamma)\right]$. Following the rotation, $\hat{\gamma}$ moves leftward from $\hat{\gamma}'$ to $\hat{\gamma}''$.

Note that the same comparative statics hold for an increase in the intensity of the trauma, ξ, or for an increase in the efficiency of the recalling technology, a. All these factors lower the amount of investments into propaganda the autocrat has to undertake to stay in power.

An increase in the necessity to co-opt the elite. A shift in co-optation, μ, only affects the amount of available resources in the status quo, making the budget constraint tighter. We illustrate this in Figure 5. Graphically, an increase in μ from μ' to μ'' generates two effects: (i) an upward shift in the intercept of the curve $\mathcal{U}^D - \mathcal{U}^A(\gamma)$ and (ii) a flattening of its slope. The first effect is given by the fact that in absence of propaganda, the difference between democracy and the status quo is $\mathcal{U}^D - \mathcal{U}^A(0;\mu) = 1-(1-\mu)^2$. At the same time, when more resources have to be redistributed to the elite, a higher fraction of resources are needed to obtain the same memory recollection effect. This explains the second effect. The increase in the distance between the utility under democracy and that obtained in the status quo increases the readiness of the population to revolt, and therefore also the danger for the autocrat. To counter the risk of being overthrown, the autocrat then increases $\hat{\gamma}$, from $\hat{\gamma}'$ to $\hat{\gamma}''$.

5 Empirical Evidence

5.1 Testable predictions of the model

Our model generates a number of testable predictions. Probably the most interesting prediction is that the necessary amount of recalling propaganda depends on the extent of a traumatic experience with democracy, before the onset of the current autocratic regime. Focusing on the extensive margin, from Equation 11 we obtain that $\hat{\gamma}$ would be

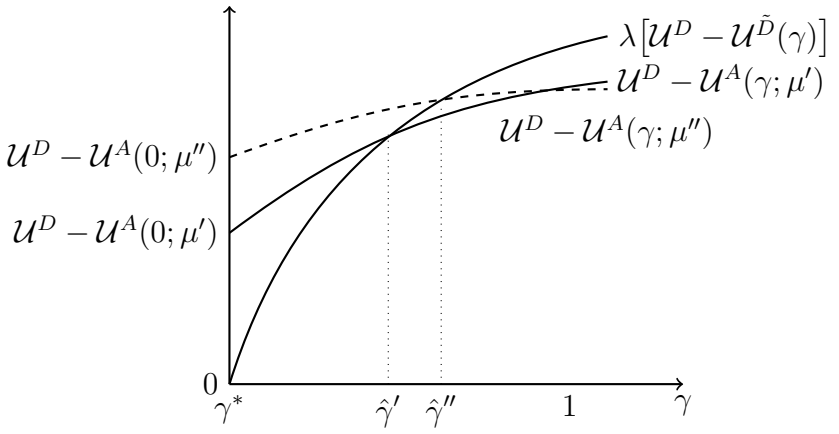

Figure 5: An increase in co-optation from μ' to μ'' moves the optimal fraction of the budget spent on memory recollection to the right, from $\hat{\gamma}'$ to $\hat{\gamma}''$.

negative if the constituency has not lived through a traumatic experience with democracy in the past (this is because $\mu < 1$). In other words, since $\xi = 0$, the autocrat ideally would like to transfer more resources to producing the productive public good than are available. By contrast, when $\xi > 0$ the autocrat finds it more convenient to counter the threat of a public revolt by spending resources on propaganda.

Using the variation of past traumatic experiences with chaotic politics, we can translate this prediction into the following empirical hypothesis:

Hypothesis 1 *Autocracies established in the aftermath of a competitive but unstable democratic regime spend more resources on propaganda.*

A second original result of our model is that, as a result of the recollection campaign, people in autocratic regimes that lived through a past traumatic experience with democracy are less supportive of democracy today than people living in an autocracy that do not hold such a negative collective memory. In our model, we see that as $\xi > 0$, the autocrat finds it convenient to invest into propaganda to reduce the value people expect from transiting to a democracy (as a result, $\mathcal{U}^{\tilde{D}}$ shifts down).

Again exploiting the cross-country variation in past traumatic experiences with competitive politics, this leads us to the following testable hypothesis:

Hypothesis 2 *Citizens living in autocracies established in the aftermath of a competitive but chaotic regime show, on average, lower support for democratic values.*

In the next two sections, we test these two hypotheses using two distinct yet connected empirical strategies and sets of variables.

5.2 Investment in propaganda

5.2.1 Data description and empirical strategy

For testing Hypothesis 1 we assemble several dataset. First, we use the Freedom House score on the freedom of the press as a proxy for propaganda.[19] Second, we use country-level information from the State Failure Problem Set as proxy for the chaotic regime.[20] Third, we rely on the Polity IV index to measure whether a country is categorised as an autocracy.[21]

To measure the fraction of resources diverted to propaganda, we use the country scores provided by the Freedom House press index—ranging from 0 (no propaganda) to 100 (highly propaganda-intensive)—from 2000 to 2015. We are then able to exploit variation in 2457 country$\times$ year data points across 165 countries.

The press freedom score is subdivided into three sub-scores capturing three different dimensions of media control: (*i*) control through laws and regulations that influence media content; (*ii*) political pressure and *direct* control on media content (including censorship); (*iii*) economic influence over media content. Along with the overall score, we use the second sub-score as an additional measure, as it better approximates the recalling technology in our model.

The cross-country average of the press freedom score is 50. It features a substantial variation, with a standard variation of 23.7. The sub-score measuring political pressure

[19] https://freedomhouse.org/report-types/freedom-press
[20] http://www.systemicpeace.org/inscrdata.html
[21] http://www.systemicpeace.org/polity/polity4.htm

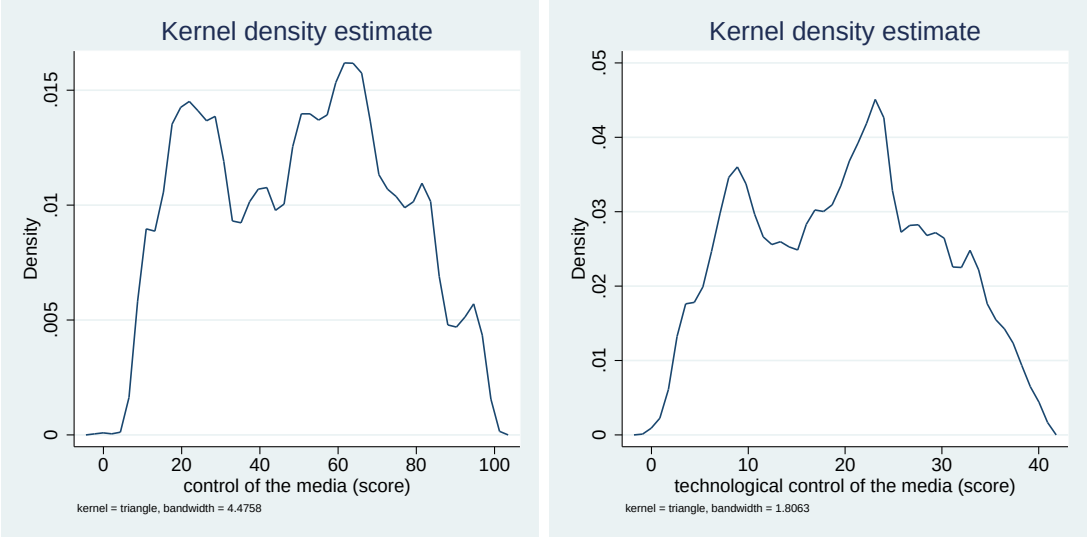

Figure 6: Cross-country distribution of the control of the media score and score measuring direct political control over media content.

and direct media control ranges from 0 to 40, with an average of 20 and a standard deviation of 9.56. Both cross-country distributions feature three peaks, as shown by Figure 6. The first peak clusters political regimes that do not invest intensively in propaganda. The second peak on the center-right side of the distribution are countries that feature a higher level of propaganda, while a third smaller peak collects a handful of countries that intensively use propaganda.

We use two main explanatory variables: a dummy indicating whether a country is an autocratic regime, and a dummy that takes the value of 1 when an autocratic regime has been preceded by a chaotic regime. The first variable comes from the PolityIV project and defines a country as an autocracy when the variable $polity2 \leq 4$.[22] The second variable is taken from the State Failure Problem Set—a project aimed at studying political instability. We use the dataset about adverse regime changes, and select two cases that specifically capture our definition of a chaotic regime: 1) the failure of state authority in a substantial part of the country, or in the capital and its surroundings ($MAGFAIL = 3$);

[22] A score of 5 in the polity 2 scale indicates a democracy, while 4 an open anocracy. For robusteness, we also run our analysis considering as autocracies those countries that take negative values of $polity2$. Our results do not change substantially.

2) complete collapse or near-total failure of state authority ($MAGFAIL = 4$). Our dummy is equal to 1 when either of the two cases have been experienced before the polity transited to an autocracy. According to our definition, 39% of the countries in our sample are autocracies, while 4% are autocracies that have been exposed to political and economic chaos before becoming an autocracy.

We also use a set of additional controls that might potentially confound the effect of the past disruptive experience on propaganda. First, we control for the logarithm of GDP per capita (adjusted for purchasing power parity in 2011 US dollars), as the wealth of a country is correlated with the amount of disposable resources the autocrat can invest in propaganda. We also use the logarithm of the population and the GDP share of military expenditure as additional control variables. Especially military expenditure varies substantially across countries. While some countries such as Iceland spend as low as 0.15% of their GDP on defense, for others—such as Eritrea—military expenditure amounts to 32% of GDP. However, the average is much lower, at about 2%. All these measures are taken from the World Development Indicators (WDI), covering the years 2000 to 2015. In our dataset, countries also vary substantially with respect to their levels of openness to the world economy. That is why we add net foreign direct investment (FDI) as an additional control. Finally, we control for two different sources of competitive pressure on the regime. To account for international pressure, we build an indicator equal to 1 if in a given year the country was subject to international sanctions imposed by the United Nations.[23] To account for domestic pressure, we construct an indicator which is equal to one when in a given year elections to the national assembly or national parliament took place in a given country.[24] Table 1 reports summary statistics for the data we use.

[23]This data is taken from the Targeted Sanctions Consortium Database, http://graduateinstitute.ch/un-sanctions

[24]This novel dataset has been compiled by using data from the Election Guide (http://www.electionguide.org) made available by the International Foundation for Electoral Systems (www.ifes.org).

Table 1: Summary Statistics. Panel A.

	mean	sd	min	max	count
control of the media (score)	50.08	23.70	0.00	99.00	2457
technological control of the media (score)	19.86	9.56	0.00	40.00	2457
autocracy	0.39	0.49	0.00	1.00	2475
autocracy× chaotic regime	0.04	0.20	0.00	1.00	2475
gdp per capita (log)	9.02	1.25	6.20	11.85	2798
military expenditure/gdp	2.16	1.93	0.04	32.66	2185
foreign direct investment	5.41	14.24	-57.43	466.56	2676
population (log)	15.13	2.36	9.15	21.03	3210
elections	0.20	0.40	0.00	1.00	3418
sanctions	0.06	0.25	0.00	1.00	3473

Our benchmark regression is given by:

$$y_{it} = \alpha + \beta_1 autocracy_i + \beta_2(autocracy_i \times chaotic\,regime_i) + X_{it}\gamma + \theta_t + \varepsilon_{it}, \qquad (12)$$

where i is the index for countries and t stands for time, measured by years from 2000 to 2015. y_{it} is our dependent variable, and stands either for the overall control of the media score or the sub-score of political pressure and direct control over media content. Our control variables are gathered by the vector X_{it}. This specification also controls for aggregate shocks that might hit the ability of the state to invest in propaganda at a given period t, θ_t, as well as country and year specific shocks, captured by ε_{it}.

5.2.2 Results

In Tables 2, 3 and 4 we present our estimations of regression (12). In Table 2 the dependent variable is the total press freedom score, while in Table 3 our dependent variable is the sub-score measuring direct political control over media content. Table 4 presents two additional robustness checks, by controlling for domestic and international pressure on the government.

Since our interest lies on the effect of past exposure to a chaotic regime on autocracies (i.e. in the steady state), we do not estimate within-country effects—even though we

Table 2: Past exposure to chaotic politics and investments into propaganda

	(1)	(2)	(3)	(4)
autocracy	34.860***	34.231***	34.249***	24.984***
	(2.426)	(2.555)	(2.570)	(3.144)
autocracy ×		5.749*	5.608*	14.375***
chaotic regime		(3.050)	(3.094)	(3.053)
military exp./gdp				2.517***
				(0.667)
gdp per capita (log)				-6.353***
				(0.928)
fdi				-0.029
				(0.031)
population (log)				1.001
				(0.684)
Constant	36.458***	36.458***	33.512***	69.266***
	(1.691)	(1.692)	(1.811)	(14.391)
Year dummies	No	No	Yes	Yes
Year dummies × chaotic regime	No	No	Yes	Yes
N	2457	2457	2457	1828
N_i	165	165	165	147
Adjusted R^2	0.515	0.517	0.515	0.597

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent variable is the control of the media score. Robust standard errors clustered at country level are reported in parentheses.

collected data for the last fifteen years for each country in the sample. We therefore provide pooled OLS estimations and cluster the standard errors to account for potential redundancy in the within-country pattern.

Column 1 of Table 2 presents the unconditional correlation between the autocracy dummy and the press freedom score. As expected, propaganda is, on average, nearly twice as intense in autocracies than in democracies (i.e., the baseline category). Our theory would now predict that propaganda is relatively cheaper in those autocracies that have been exposed to a chaotic regime in the past. Indeed, β_2 is found to be significant and positive in column 2. Specifically, the intensity of propaganda in these countries is 5% higher than in other autocracies, and 40% higher than in democracies.

In column 3, we add time trends to control for possible aggregate shocks that hit all economies in the world, and a specific time trend for our autocracies of interest. After controlling for these sources of aggregate shock, our results do not substantially change.

Finally, column 4 presents a more robust comparison between the three political regimes that are the focus of our paper, by additionally controlling for military expenditure, foreign direct investment, as well as the logarithm of GDP per capita and the population.

Based on this conditional distribution, we observe a drop in the magnitude of β_1 by 10% and a rise of β_2 by 9%. Accordingly, the propaganda effort in autocracies is 25% higher than in democracies. The specific group of autocracies that have experienced a chaotic regime in the past, however, have a 15% higher propaganda effort than those autocracies that were not exposed to a chaotic regime in the past.

Looking at the effect of military expenditure on our outcome of interest reveals that military expenditure can serve as a complement to propaganda. Specifically, we find that an additional percent of GDP spent on the military results in 2.5% more propaganda. Conversely, GDP is negatively correlated with propaganda expenditure. This means that poorer countries, on average, spend more on propaganda. Foreign direct investment

and population size, on the other hand, are not significantly related to the level of propaganda.

We replicate this analysis in Table 3, using the sub-score measuring direct political control over media content. Although we obtain substantially similar results that corroborate the findings of our model, it is worth mentioning that once we use a closer proxy for the mechanism outlined in our model, the link between past exposure to a chaotic regime and propaganda becomes stronger. Specifically, while in Table 2 being exposed to a chaotic regime in the past leads to a 6% increase in levels of propaganda within autocracies, once we use the proxy for direct control over media content we find a difference of 10% between the two groups of autocracies. This difference slightly increases further once we control for aggregate shocks that in a given year hit simultaneously the 165 countries in our sample.

Finally, in column 4 we provide a more robust estimation of β_1 and β_2. To do so, as in Table 2, we compare countries with the same level of military expenditure, GDP per capita, FDI and population. Adding these additional controls further strengthens our results, with exposure to a chaotic regime in the past now leading to a 17.5% increase in levels of propaganda within autocracies.

A potential concern is the presence of additional unobservable factors that might also influence the level of propaganda. Among these, two of the most important factors are related to international and domestic pressure that might induce the government to seek for additional popular support through propaganda. In columns 1 and 3 of Table 4, we therefore additionally control for sanctions imposed by the international community to a country i at time t. In columns 2 and 4, we control for a potential electoral business cycle effect on propaganda, by including two variables measuring if an election takes place in a given year t or in the next year $t+1$, in country i. These additional specification do not substantially change our findings.

Table 3: Past exposure to chaotic politics and direct control over media content

	(1)	(2)	(3)	(4)
autocracy	12.932***	12.536***	12.546***	8.577***
	(1.021)	(1.062)	(1.068)	(1.230)
autocracy ×		3.622**	4.327***	7.215***
chaotic regime		(1.511)	(1.481)	(1.528)
military exp./gdp				1.031***
				(0.241)
gdp per capita (log)				-2.665***
				(0.381)
fdi				-0.020
				(0.014)
population (log)				0.768***
				(0.280)
Constant	14.804***	14.804***	12.811***	22.321***
	(0.722)	(0.722)	(0.818)	(5.776)
Year dummies	No	No	Yes	Yes
Year dummies × chaotic regime	No	No	Yes	Yes
N	2457	2457	2457	1828
N_i	165	165	165	147
Adjusted R^2	0.435	0.440	0.441	0.546

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent variable is the sub-score on the technological control of the media, that also includes censorship. Robust standard errors clustered at country level are reported in parentheses.

Table 4: Chaotic regime exposure and propaganda effort: international and domestic pressure

	(1)	(2)	(3)	(4)
	control of the media		technological control	
autocracy	24.948***	24.712***	8.562***	8.489***
	(3.061)	(3.113)	(1.192)	(1.222)
autocracy ×	14.691***	14.261***	7.353***	7.191***
chaotic regime	(3.043)	(3.510)	(1.531)	(1.736)
military exp./gdp	2.443***	2.497***	0.998***	1.024***
	(0.664)	(0.659)	(0.238)	(0.239)
gdp per capita (log)	-6.017***	-6.238***	-2.518***	-2.628***
	(0.964)	(0.926)	(0.399)	(0.381)
fdi	-0.035	-0.031	-0.022	-0.020
	(0.031)	(0.031)	(0.014)	(0.014)
population (log)	0.994	1.012	0.765***	0.772***
	(0.682)	(0.674)	(0.280)	(0.277)
sanction	9.737**		4.251**	
	(4.012)		(1.700)	
election		-2.703***		-0.851***
		(0.742)		(0.310)
election (lag)		-2.200***		-0.733**
		(0.717)		(0.304)
Constant	66.125***	69.326***	20.950***	22.342***
	(14.500)	(14.178)	(5.827)	(5.718)
Year dummies	Yes	Yes	Yes	Yes
Year dummies × chaotic regime	Yes	Yes	Yes	Yes
N	1828	1828	1828	1828
N_i	147	147	147	147
Adjusted R^2	0.606	0.600	0.556	0.548

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors clustered at country level are reported in parentheses.

5.3 Beliefs about democracy

A second testable prediction of our model is that citizens living in autocracies established in the aftermath of a competitive but chaotic regime show, on average, lower support for democratic values. In this section, we present novel empirical evidence on the link between exposure to a chaotic regime in the past and popular beliefs about democracy.

Our proxy for popular support for democracy is obtained from the World Value Survey (WVS) as the (sample) weighted fraction of respondents that in a given country consider democracy to be of absolute importance. Operationally, we compute the weighted mean of individuals responding 10 to the 1-10 WVS scale E235: "*How important is it for you to live in a country that is governed democratically?*" Being asked in two WVS waves (2005 and 2010), this exercise yields 108 data points in 73 countries around the world. The percentage of people in a country declaring that democracy is absolutely important is on average 47%—the red line in Figure 1, which depicts the cross-country average for 73 countries.

We show in column 1 of Table 5 that these beliefs do not vary significantly between autocracies and democracies. However, column 2 in Table 5 shows how in autocracies that have been exposed to a chaotic regime in the past, the percentage of people who consider democracy to be of absolute importance is 14% lower than in other autocracies. In column 3 we control this relationship for the logarithm of GDP per capita and of the population. In column 4, we also add the average years of schooling (Barro and Lee 2015) and the year of independence as additional controls.[25] In column 5, we add the corruption index and the government effectiveness index from the World Government Indicators (WGI) as additional controls for institutional quality of the status quo. We also look

[25]The country's year of independence ranges from 1800—the year when the PolityIV project starts its analysis—to 1991. Those countries that take the minimum value have never been a colony. Those that became independent in 1991 are former Soviet countries. We take years of schooling as well as the timespan since independence as rough proxies for the political maturity of a population—affecting both their understanding of politics and their skills (cognitive ability) in political communication. See for instance Brender and Drazen (2008) who look at the political business cycle in old and new democracies.

Table 5: Chaotic regime exposure and beliefs in democracy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
autocracy	-0.055	-0.029	-0.020	0.009	0.013	0.031	0.038
	(0.034)	(0.037)	(0.040)	(0.042)	(0.044)	(0.045)	(0.046)
autocracy ×		-0.140***	-0.133***	-0.166***	-0.173***	-0.177***	-0.145***
chaotic regime		(0.034)	(0.034)	(0.044)	(0.038)	(0.039)	(0.041)
gdp per capita (log)			0.011	-0.012	-0.016	-0.014	0.048
			(0.015)	(0.023)	(0.022)	(0.022)	(0.049)
population (log)			-0.013	-0.026***	-0.018	-0.015	-0.013
			(0.009)	(0.009)	(0.012)	(0.013)	(0.012)
years of school				0.005	0.007	0.009	-0.004
				(0.008)	(0.008)	(0.008)	(0.010)
year of independence				-0.001**	-0.000	-0.000	0.000
				(0.000)	(0.000)	(0.000)	(0.000)
corruption index					0.079	0.094*	0.104
					(0.052)	(0.054)	(0.075)
government					-0.077	-0.093*	-0.085
effectiveness index					(0.052)	(0.056)	(0.083)
military exp./gdp						-0.020	-0.012
						(0.013)	(0.014)
gini index							0.001
							(0.003)
Constant	0.488***	0.488***	0.600***	1.948***	1.655**	1.510**	0.095
	(0.017)	(0.017)	(0.188)	(0.666)	(0.667)	(0.649)	(1.195)
N	108	108	104	94	94	93	60
N_k	73	73	71	62	62	61	39
Adjusted R^2	0.026	0.067	0.082	0.123	0.126	0.138	0.266

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Dependent variable is fraction of people considering democracy absolutely important. Robust standard errors clustered at country level are reported in parentheses.

at the coercive side of political beliefs formation, by controlling for military expenditure in column 6. Sequentially adding these controls to our baseline model strengthens our results, with the difference in the share of people considering democracy to be absolutely important between increasing from -14% to -17.7%, between the two types of autocratic regimes we consider.

Finally, we add the gini index in column 7, and see that inequality does not affect neither qualitatively nor quantitatively the effect of chaotic regime exposure on popular beliefs about democracy.

6 Conclusion

This paper provides an explanation why an autocracy can obtain high levels of political support from its citizenry, despite offering potentially lower economic returns than those available in alternative, more democratic political regimes. Our explanation focuses on the impact of authoritarian propaganda on the political beliefs of the population. In our model, propaganda directly reduces the propensity of the population to revolt, by reactivating negative collective memories associated with competitive democratic politics.

Our model has two key features. First, negative collective memories about democracy have to be recalled and reactivated to become politically salient. In countries that went through more traumatic experiences with competitive politics before the establishment of the autocratic status quo, recalling these memories with the help of propaganda is easier and less costly. Second, propaganda nevertheless remains economically costly, as disposable resources are diverted from investment into a productive public good, which is complementary to private investment. Both features taken together show how autocracies can persist over time, even though they offer lower economic returns than more competitive regimes.

A good case to illustrate our mechanism is the Russian Federation under Putin. In

an empirical companion paper (Belmonte and Rochlitz 2018), we show how Russia's government used an intense propaganda campaign to reactivate traumatic memories about democratic politics during the 1990s, to convince the population that a democratic alternative to Russia's current electoral authoritarianism would resemble the political and economic chaos of the country's recent past. In the paper, we find that those Russian regions that were hit harder during the 1990s were more likely to vote for Putin, after the start of a campaign on state controlled TV to recall traumatic memories from the 1990s. We also find that the effect is amplified in regions where the local press engages more intensely in recalling the chaos of the 1990s.

In this paper, we further illustrate our mechanism with additional cross-country evidence from 165 countries. We find that autocracies that experienced a democratic but chaotic regime in the past exert a 15% additional propaganda effort compared to autocracies that were not exposed to competitive but unstable politics. We also find that in autocracies preceded by a chaotic but competitive regime, the share of people considering democracy to be of absolute importance is 17.7% lower than in otherwise comparable autocratically governed countries.

The implication of our theory is that the degree of public awareness about the true nature of potential political alternatives can be a crucial driver of regime transition. When this information is controlled by the state and the autocrat is able to shape its content, regime transitions from autocracy to democracy become less likely. In our model, the existence of negative collective memories about democratic institutions reduces the costs of shaping information with the help of propaganda, as the population is more receptive to the message of the autocrat.

References

[1] Acemoglu, D. and Robinson, J. (2006), *Economic Origins of Dictatorship and Democracy*, Cambridge: Cambridge University Press.

[2] Acemoglu, D. and Robinson, J. (2008), *Persistence of Power, Elites, and Institutions*, American Economic Review, 98(1), 267-93.

[3] Acemoglu, A., Ticchi, D. and Vindigni, A. (2010), *A Theory of Military Dictatorships*, American Economic Journal: Macroeconomics, 2(1): 1-42.

[4] Aghion, P., Algan Y. and Cahuc P. (2011) *Civil Society and the State: The Interplay between Cooperation and Minimum Wage Regulation*, Journal of the European Economic Association, 9(1): 3-42.

[5] Alesina, A. and Angeletos, G. (2005), *Fairness and Redistribution*, American Economic Review, 95(4): 960-980.

[6] Alesina, A. and Passarelli, F. (2015), *Loss Aversion in Politics*, NBER Working Paper No. 21077.

[7] Barro, R. (1991), *Economic Growth in a Cross Section of Countries*, Quarterly Journal of Economics, 95(4): 960-980.

[8] Barro, R. and Lee, J. (2015), *Education Matters: Global Schooling Gains from the 19th to the 21st Century*, Oxford: Oxford University Press.

[9] Barro, R. and Sala-i-Martin, X. (1992), *Convergence*, Journal of Political Economy, 100(2): 223-251.

[10] Belmonte, A. and Rochlitz, M. (2018), *The Political Economy of Collective Memories: Evidence from Russian Politics*, HSE Political Science Working Paper No. 59.

[11] Benabou, R. and Tirole, J. (2002), *Self-Confidence and Personal Motivation*, Quarterly Journal of Economics, 117(3): 871-915.

[12] Besley, T. and Persson, T. (2017), *Democratic Values and Institutions*, Working Paper.

[13] Brender, A. and Drazen, A. (2008), *How Do Budget Deficits and Economic Growth Affect Reelection Prospects? Evidence from a Large Panel of Countries*, American Economic Review, 98(5): 2203-2220.

[14] Dessi, R. (2008), *Collective Memory, Cultural Transmission, and Investments*, American Economic Review, 98(1): 534 - 560.

[15] Dickson E. (2010), *Leadership, Followership, and Beliefs about the World: An Experiment*, Working Paper.

[16] Edmond, C. (2013), *Information Manipulation, Coordination, and Regime Change*, Review of Economic Studies, 80(4): 1422-1458.

[17] Escriba-Folch, A. (2013), *Repression, Political Threats, and Survival under Autocracy*, International Political Science Review, 34(5): 543-560.

[18] Gehlbach, S. and Sonin, K. (2014), *Government Control of the Media*, Journal of Public Economics, 118: 163-171.

[19] Gehlbach, S., Sonin, K. and Svolik, M. (2016), *Formal Models of Nondemocratic Politics*, Annual Review of Political Science, 19: 565-584.

[20] Gennaioli, N. and Shleifer, A. (2016), *What Comes to Mind*, Quarterly Journal of Economics, 125(4): 1399-1433.

[21] Gorodnichenko, Y. and Roland, G. (2015), *Culture, Institutions and Democratization*, NBER Working Paper No. 21117.

[22] Guriev, S. and Treisman, D. (2015), *How Modern Dictators Survive: An Informational Theory of the New Authoritarianism*, NBER Working Paper No. 21136.

[23] Hollyer, J., Rosendorff, P. and Vreeland, J. (2015), *Transparency, Protest, and Autocratic Instability*, American Political Science Review, 109(4): 764-784.

[24] Kahneman, D. and Tversky, A. (1979), *Prospect Theory: An Analysis of Decision under Risk*, Econometrica, 47(2): 263-291.

[25] Koszegi, B. and Rabin, M. (2006), *A Model of Reference-Dependent Preferences*, Quarterly Journal of Economics, 121(4): 1133-1165.

[26] Lipset, S. (1959), *Some Social Requisites of Democracy: Economic Development and Political Legitimacy*, The American Political Science Review, 53(1): 69-105.

[27] Levitsky, S. and Way, L. (2010), *Competitive Authoritarianism: Hybrid Regimes after the Cold War*, Cambridge: Cambridge University Press.

[28] Lott, J. (1999), *Public Schooling, Indoctrination, and Totalitarianism*, Journal of Political Economy, 107(6): 127-157.

[29] Mullainathan, S. (2002), *A Memory-Based Model of Bounded Rationality*, Quarterly Journal of Economics, 117(3): 735-774.

[30] North, D., Wallis, J. and Weingast, B. (2009), *Violence and Social Orders: A Conceptual Framework for Interpreting Recorded Human History*, Cambridge: Cambridge University Press.

[31] Olick, J. and Robbins, J. (1998), *Social Memory Studies: From "Collective Memory" to the Historical Sociology of Mnemonic Practices*, Annual Review of Sociology, 24: 105-140.

[32] Olick, J., Vinitzky-Seroussi, V. and Levy, D., eds., (2011), *The Collective Memory Reader*, New York: Oxford University Press.

[33] Saint-Paul, G. (2009), *Endogenous Indoctrination: Occupational Choice, the Evolution of Beliefs, and the Political Economy of Reform*, Economic Journal, 120(544): 325-353.

[34] Ticchi, D., Verdier, T. and Vindigni, A. (2013), *Democracy, Dictatorship and the Cultural Transmission of Political Values*, IZA Discussion Paper No. 7441.

[35] Treisman, D. (2015), *Income, Democracy, and Leader Turnover*, American Journal of Political Science, 59(4): 927-942.

[36] Walker, R., Skowronski, J., Gibbons, J., Vogl, R. and Thompson, C. (2003), *On the Emotions that Accompany Autobiographical Memories: Dysphoria Disrupts the Fading Affect Bias*, Cognition and Emotion, 17(5): 703-723.

[37] Welzel, C. (2007), *Are Levels of Democracy Affected by Mass Attitudes? Testing Attainment and Sustainment Effects on Democracy*, International Political Science Review, 28(4): 397-424.

[38] Wintrobe, R. (1990), *The Tinpot and the Totalitarian: An Economic Theory of Dictatorship*, The American Political Science Review, 84(3): 849-872.

[39] Wintrobe, R. (2007), *Dictatorship: Analytical Approaches*, in Carles Boix and Susan Stokes, eds., Oxford Handbook of Comparative Politics, New York: Oxford University Press.

[40] Zhao, D. (2009), *The Mandate of Heaven and Performance Legitimacy in Historical and Contemporary China*, American Behavioral Scientist, 53(3): 416-433.

A Proofs

A.1 Proof of Lemma 1

At the stage S3 of the game, citizens maximize (9) taking γ as given. The first order condition equates the marginal benefit to invest one unit more of physical capital, k, with its marginal cost, as follows:

$$(1-\tau)(1-\mu)(1-\gamma)T = \hat{k}^A,$$

where k^A is the optimal units employed in equilibrium. Given the convex costs, such solution is also unique and it is equal to $\hat{k}^A = (1-\tau)(1-\mu)(1-\gamma)T$. Note that in this sub-equilibrium k^A is a function of γ as well as μ.

While living in an autocracy, citizens make up an expectation of what they would invest if they were in their political reference point. We now compute the optimal level of units of capital under a democratic regime, k^D, and the optimal units in the chaotic state, $k^{\tilde{D}}$. In the first state, citizens would expect either the absence of rents and propaganda, that is $\mathcal{U}^D = (1-\tau)kT - \frac{1}{2}k^2$. Maximizing $\mathcal{U}^D$ with respect to k yields $\hat{k}^D = (1-\tau)T$. In the second state, citizens would also expect a loss of the economic output proportional to ξ, that is $\mathcal{U}^{\tilde{D}} = (1-\tau)(1-\xi a\gamma)kT - \frac{1}{2}k^2$. It is easy to show that the first order condition gives us optimal stock of $\hat{k}^{\tilde{D}} = (1-\tau)(1-\xi a\gamma)T$.

Given the setting we pose in Section 3, we can show that private investments are rankable across states of the world and that private investments are the largest under democracy. We first show that $\hat{k}^D \geq \hat{k}^A$:

$$(1-\tau)T \geq (1-\tau)(1-\mu)(1-\gamma)T,$$
$$\gamma \geq -\frac{\mu}{1-\mu},$$

that is always true since $\mu \in (0,1)$.

We now show that $\hat{k}^D \geq \hat{k}^{\tilde{D}}$:

$$(1-\tau)T \geq (1-\tau)(1-a\gamma\xi)T,$$

$$a\gamma\xi \geq 0,$$

that is always true as well since all the terms in the left hand side are non negative. This concludes the proof.

A.2 Proof of Proposition 2

A.2.1 Revolutionary threat in the subgame equilibrium

As citizens solve their optimization problem (which gives the optimal units of physical capital, $\hat{k}^A$), they simultaneously get to know their utility level in the equilibrium path, taking γ as given. Formally, the indirect utility function in the status quo is obtained by plugging the expression of $\hat{k}^A$ into (9):

$$\hat{\mathcal{U}}^A = (1-\tau)(1-\gamma)(1-\mu)T\hat{k}^A - \frac{1}{2}(\hat{k}^A)^2,$$

$$\hat{\mathcal{U}}^A = (1-\tau)^2(1-\gamma)^2(1-\mu)^2T^2.$$

Likewise, we can obtain the optimal level of utility that citizens would have obtain have they lived in a democracy or in a chaotic regime. The two are obtained from substituting $\hat{k}^D$ and $\hat{k}^{\tilde{D}}$ into their respective utilities:

$$\hat{\mathcal{U}}^D = (1-\tau)^2T^2,$$

$$\hat{\mathcal{U}}^{\tilde{D}} = (1-\tau)^2(1-a\xi\gamma)^2T^2.$$

We can now write an explicit form of the threshold $\lambda^\dagger$ (Equation 8) as a function of

only γ that citizens set up in the last stage as the rule for not initiating a revolution.

$$\begin{aligned}\lambda^{\dagger} &\equiv \frac{\mathcal{U}^{D}-\mathcal{U}^{A}}{\mathcal{U}^{D}-\mathcal{U}^{\tilde{D}}} \\ &= \frac{T^{2}-(1-\gamma)^{2}(1-\mu)^{2}T^{2}}{T^{2}-(1-a\xi\gamma)^{2}T^{2}} \\ &= \frac{1-(1-\gamma)^{2}(1-\mu)^{2}}{1-(1-a\xi\gamma)^{2}}.\end{aligned}$$

Therefore, citizens will revolt if

$$\lambda \geq \frac{1-(1-\gamma)^{2}(1-\mu)^{2}}{1-(1-a\xi\gamma)^{2}},$$

or if

$$\lambda\left[1-(1-a\xi\gamma)^{2}\right] \geq 1-(1-\gamma)^{2}(1-\mu)^{2}, \tag{A.1}$$

where on the left hand side of (A.1) is the utilitarian distance between democracy and the chaotic regime, discounted by the share of people holding memory over the traumatic past, while on the right hand side is the utilitarian distance between democracy and the status quo. See Figure 3.

A.2.2 Optimal recollection of memory

As we explain in the paper, the autocrat faces a trade-off between fostering private investments, $\hat{k}^{A}$, and providing a non attractive picture of the citizens' political reference point. More investments in fact mean a larger fiscal base on top of what extracting more resources.

We now derive the tax revenues collected by the autocrat for either providing the public good or extracting private rents in the second period, if the regime remains an autocracy. After citizens choose the optimal units of capital, $\hat{k}^{A}$ they pay taxes. The

tax revenues collected, T_2, will therefore amount to

$$\begin{aligned} T_2 = \tau y^A &= \tau \hat{k}^A (1-\gamma)(1-\mu)T \\ &= \tau(1-\tau)(1-\gamma)^2(1-\mu)^2 T^2. \end{aligned} \tag{A.2}$$

As we showed in Section 4.1, in period 2 the game ends and it is optimal for the autocrat to extract the entire pool of public resources. That is, $R = T_2$. Note that, as we denoted in Equation (10), the lifetime flow of rents of an autocrat that lives for two periods is a monotonic decreasing function of γ, i.e. $R(\gamma)$. Therefore, Equation (A.2) incentivises the autocrat to keep propaganda as low as possible. Equation (A.1) incentivises the autocrat to increase propaganda so as to convince citizens that the alternatives are not better than the status quo.

At stage S2, then, the autocrat decides the optimal fraction of resources that he invests in equilibrium by maximizing $R(\gamma)$. The first derivative is given by

$$R'(\gamma) = -2\tau(1-\tau)(1-\gamma)(1-\mu)^2 T^2 \leq 0,$$

and it is always negative. If it was not for the revolutionary constraint, autocrat would alway set a corner solution $\gamma^* = 0$. However, it is easy to show that γ^* cannot be an equilibrium. Substituting γ^* into the two sides of the revolutionary constraint (A.1) yields:

$$\lambda\big[1 - (1 - a\xi\gamma^*)^2\big] = 0,$$

and

$$1 - (1-\gamma^*)^2(1-\mu)^2 = 1 - (1-\mu)^2 > 0.$$

As the right hand side of (A.1) is greater than the left hand side citizens will always revolt. The optimal $\hat{\gamma}$ must be an interior solution that takes into account the *de facto* power of the citizens.

The equilibrium is such that the autocrat gives to the citizens an expected utility in the political reference point that is exactly equal to the one they obtain under the status quo (since increasing γ is costly for the autocrat it is obvious that he never sets a higher level of it). Formally, this written as

$$\lambda = \lambda^{\dagger}(\hat{\gamma}),$$

or as

$$\lambda\big[1-(1-a\xi\hat{\gamma})^2\big] = 1-(1-\hat{\gamma})^2(1-\mu)^2. \tag{A.3}$$

Equation (A.3) is a second degree equation in $\hat{\gamma}$. Its solution gives Equation (11) in the paper, illustrated graphically in Figure 3.

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