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The Autocrat's Survival Calculus: Winning Coalitions, Military Defection, and Regime Durability

A Formal Model with Empirical Calibration from 157 Mass Uprisings

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ABSTRACT

Why do some autocracies survive mass uprisings while others collapse? We model the autocrat's survival problem as a three-player extensive-form game among the autocrat, the selectorate, and the military, in which regime durability is a function of winning coalition size, rent distribution, and military loyalty. Using an original dataset of 157 mass uprising episodes across 91 countries (1945–2013), augmented by the Political Topology dataset, we establish four principal findings. First, military defection is dispositive in 67% of regime transitions: when the security apparatus withdraws support, regimes fall within days; when it holds, regimes survive indefinitely. Second, winning coalition size is inversely related to leader tenure following a power-law decay, with a coefficient of $\alpha = -0.74$ (SE = 0.09). Third, 78% of empowered militaries —those holding cabinet positions or controlling significant budgetary resources—choose repression over defection, a finding we rationalize through the military's economic dependence on regime survival. Fourth, capital flight precedes military defection by an average of 18 months (SD = 7.3), providing a leading indicator of regime fragility that outperforms standard political risk indices. We formalize the military's decision as a kingmaker's game, derive the conditions under which the unique subgame-perfect equilibrium involves defection, and generate testable predictions about the interaction between elite fracture, capital mobility, and coercive capacity. Our results integrate selectorate theory (Bueno de Mesquita et al. 2003) with the civil-military relations literature (Svolik 2012; Geddes, Wright, and Frantz 2014), offering a unified framework for understanding authoritarian durability and collapse.

Keywords: autocratic survival, selectorate theory, military defection, winning coalition, capital flight, regime transition, civil-military relations, game theory

JEL Codes: D72, D74, H56, P16

1. Introduction

The popular image of the dictator—irrational, delusional, driven by ego—is not merely inaccurate; it is analytically disabling. Autocrats are not mad. They are solving an optimization problem: maximize tenure in office subject to the constraint that a sufficient number of powerful actors remain loyal to prevent a coup, revolution, or electoral defeat. The failure to appreciate this rationality leads to policy prescriptions that are at best ineffective and at worst counterproductive.

This paper develops a formal model of the autocrat's survival calculus and subjects it to empirical testing using data from 157 mass uprising episodes across 91 countries between 1945 and 2013. Our central argument is that autocratic durability is determined by the interaction of three variables: the size of the winning coalition, the distribution of economic rents, and the loyalty of the military. These three variables are not independent. They constitute a system in which each constrains the others, producing equilibrium configurations that explain both the remarkable stability of some autocracies and the sudden collapse of others.

The theoretical architecture draws primarily on selectorate theory, developed by Bueno de Mesquita, Smith, Siverson, and Morrow (2003), which provides the foundational insight that all leaders—democratic and authoritarian alike—depend on a *winning coalition* whose continued support is necessary for political survival. In democracies, this coalition is large (millions of voters). In autocracies, it is small (generals, oligarchs, party elites, tribal leaders). The size of the winning coalition relative to the total selectorate—the pool of individuals who could potentially be in the coalition—determines the regime's incentive structure: what it provides, to whom, and at what cost.

We extend selectorate theory in three directions. First, we endogenize the military's loyalty decision by modeling it as a game between the autocrat and the military command, where the military's choice between repression and defection depends on its economic independence from the regime. Second, we identify capital flight as a leading indicator of military defection, establishing an average lead time of 18 months through event-study analysis of 43 episodes in which military defection occurred. Third, we integrate the formal model with large-N empirical analysis, estimating the power-law relationship between coalition size and tenure, and the probit probability of military defection as a function of observable covariates.

Our principal findings can be summarized in four propositions, each derived from the formal model and tested against the data:

Finding 1. Military defection is dispositive in 67% of regime transitions. When the security apparatus withdraws support, the regime falls within days. When it holds, the regime survives indefinitely.

Finding 2. Winning coalition size is inversely related to leader tenure, following a power-law decay with exponent $\alpha = -0.74$ (SE = 0.09, $p < 0.001$). Halving the coalition approximately doubles expected tenure.

Finding 3. 78% of empowered militaries—those holding cabinet positions or controlling ≥10% of the national budget—choose repression over defection during mass uprisings. Economic dependence on the regime is the strongest predictor of this choice.

Finding 4. Capital flight precedes military defection by an average of 18 months (SD = 7.3). Abnormal capital outflows exceeding two standard deviations above the country mean

predict military defection with an AUC of 0.81.

The paper proceeds as follows. Section 2 reviews the relevant literature. Section 3 presents the formal model. Section 4 describes our data. Sections 5 through 8 report results. Section 9 presents comparative case studies. Sections 10 and 11 offer discussion and address limitations. Section 12 concludes.

2. Literature Review

Our work sits at the intersection of three literatures: selectorate theory, civil-military relations, and the economics of authoritarian governance. We briefly review each before identifying the gap our model fills.

2.1 Selectorate Theory and the Logic of Political Survival

The foundational contribution of Bueno de Mesquita, Smith, Siverson, and Morrow (2003) was to show that all political leaders solve the same problem—maintaining the support of a winning coalition—but that the institutional context determines the size of the coalition and therefore the leader's incentive structure. In small-coalition systems (autocracies), leaders maximize tenure by distributing private goods to a narrow elite. In large-coalition systems (democracies), leaders distribute public goods to a broad electorate. This insight unified the study of democratic and authoritarian governance under a single analytical framework.

Subsequent work has refined and extended selectorate theory in several directions. Bueno de Mesquita and Smith (2011) translated the formal theory into a more accessible framework emphasizing the "rules to rule by." Escriba-Folch and Wright (2010) showed that the theory's predictions about foreign aid allocation hold empirically. De Mesquita and Smith (2010) demonstrated that the winning coalition's size predicts patterns of public goods provision, corruption, and economic growth with remarkable precision.

However, selectorate theory treats the military as part of the winning coalition without modeling its distinctive strategic position. The theory predicts *that* autocrats must keep the military loyal, but says little about *how* the military evaluates its options when faced with a crisis, or *when* it will choose defection over repression. Our model fills this gap.

2.2 Civil-Military Relations in Authoritarian Regimes

The civil-military relations literature has established several regularities about the military's political role. Geddes (1999) showed that military regimes are the most common form of autocracy but also the least durable, collapsing from internal splits rather than external pressure. Svolik (2012) formalized the "problem of authoritarian power-sharing" as a commitment problem: the autocrat cannot credibly commit to sharing rents with the military, and the military cannot credibly commit not to stage a coup. This produces a zone of instability in which both sides invest in monitoring and deterrence.

Geddes, Wright, and Frantz (2014) provided the most comprehensive empirical analysis of autocratic breakdown, showing that 61% of democratic deaths between 1789 and 2008 were caused by military coups. Barany (2023) extended this analysis to the Arab Spring, demonstrating that the military's decision to support or abandon the regime was the single

most important variable determining uprising outcomes. Lee (2009) documented the statistical regularity that military defection is associated with regime transition in two-thirds of cases.

What the civil-military relations literature lacks is a formal integration with selectorate theory. Svolik's (2012) model treats the military's decision in isolation from the broader coalition dynamics that selectorate theory illuminates. Geddes et al. (2014) provide excellent descriptive statistics but no formal model of the military's decision calculus. Our model unifies these approaches.

2.3 The Economics of Authoritarian Governance

Acemoglu and Robinson (2006) provided the canonical model of democratic transition as a game between economic elites and citizens, in which democratization serves as a credible commitment to redistribution during revolutionary threats. Their framework, while powerful, treats the military as an instrument of elite preferences rather than as an independent strategic actor. In practice, the military often has interests that diverge from both the autocrat and the broader economic elite—a point emphasized by Tullock (1987) in his early work on autocratic governance.

Wintrobe (1998) introduced the "dictator's dilemma"—the information problem that arises when repression makes honest feedback impossible—and distinguished between "totalitarian" and "tinpot" dictatorships based on their relative use of repression and loyalty. Egorov and Sonin (2011) formalized the competence-loyalty tradeoff that autocrats face when selecting subordinates. Gandhi and Przeworski (2006) showed that authoritarian institutions (legislatures, parties) serve as mechanisms for co-optation rather than genuine representation.

The economics literature has also documented the fiscal consequences of autocracy. Papaioannou and Siourounis (2008) estimated the "autocracy discount" at approximately 1.5–2.5 percentage points of annual GDP growth. Cuaresma, Oberhofer, and Raschky (2011) showed that capital flight from autocracies follows predictable patterns correlated with elite fracture. Andersen, Johannesen, and Rijkers (2020) used leaked offshore banking data to demonstrate that elite wealth extraction from autocracies is substantially larger than previously estimated.

2.4 The Gap: Integrating Coalition Dynamics, Military Choice, and Financial Signals

The existing literature provides the building blocks for our analysis but has not assembled them into a unified framework. Selectorate theory explains the steady state of autocracy but not its crisis dynamics. The civil-military relations literature explains when regimes fall but not how coalition size and rent distribution shape the military's decision. The economics

literature documents capital flight but has not formally connected it to the military defection decision.

Our contribution is to integrate these literatures through a formal game-theoretic model that (1) embeds the military's defection decision within the selectorate framework, (2) derives testable predictions about the conditions under which defection occurs, and (3) identifies capital flight as the observable signal that connects elite fracture to military wavering.

3. The Model: A Three-Player Game

We model the autocrat's survival problem as an extensive-form game with three players: the *Autocrat* (**A**), the *Selectorate* (**S**), and the *Military* (**M**). The game proceeds in stages corresponding to the sequence of events observed in regime crises. We first define the players, strategy spaces, and payoffs, then characterize the subgame-perfect equilibrium.

3.1 Players and Environment

Definition 1 (Selectorate Structure). The polity consists of a population of size N. The *selectorate* $S \subset N$ is the set of individuals with a voice in choosing the leader, of size $|S|$. The *winning coalition* $W \subset S$ is the minimum subset whose support is necessary for the leader to remain in power, of size $|W|$. We define the *loyalty norm* as $w = |W| / |S| \in (0, 1)$.

The total economic surplus of the polity is Y. The autocrat allocates Y among three uses: private rents to coalition members (R), public goods provision (G), and personal extraction (E), subject to the budget constraint $R + G + E \leq Y$.

Definition 2 (Military Economic Independence). The military's economic independence parameter $\delta \in [0, 1]$ measures the fraction of the military's economic rents that would survive a regime transition. When $\delta = 0$, the military's wealth is entirely regime-dependent (e.g., IRGC in Iran). When $\delta = 1$, the military's economic base is entirely independent of the current leader (e.g., Egyptian military under Mubarak). Intermediate values represent partial independence.

3.2 Timing and Strategies

The game unfolds in four stages:

Stage 1 (Allocation): The autocrat **A** chooses the allocation vector (R, G, E) subject to $R + G + E \leq Y$. The per-capita rent to each coalition member is $r = R / |W|$.

Stage 2 (Shock): Nature draws a crisis shock $\theta \sim F(\theta)$ representing the intensity of mass mobilization. Higher θ corresponds to larger, more sustained protests.

Stage 3 (Military Decision): Observing the allocation and the shock, the military **M** chooses between two actions: *Repress* (R) or *Defect* (D).

Stage 4 (Outcome): If the military represses, the autocrat survives with probability $p_R(\theta)$, which is decreasing in the crisis intensity θ. If the military defects, the regime falls with certainty.

3.3 Payoffs

The autocrat's payoff is:

$$U_A = E + \beta_A \cdot V_A \cdot \mathbf{1}[survive] \tag{1}$$

where V_A is the continuation value of office and β_A is the autocrat's discount factor. The indicator function takes value 1 if the autocrat survives and 0 otherwise.

The military's payoff under repression is:

$$U_M(R) = r_M \cdot p_R(\theta) + (1 - p_R(\theta)) \cdot (\delta \cdot r_M - c_R) - \gamma \cdot \theta \tag{2}$$

where r_M is the military's rent from the regime, c_R is the cost of failed repression (punishment by the successor regime), and $\gamma \cdot \theta$ is the reputational cost of repression, increasing in the visibility and intensity of the crisis.

The military's payoff under defection is:

$$U_M(D) = \delta \cdot r_M + \phi(\theta) - c_D \tag{3}$$

where $\varphi(\theta)$ represents the "kingmaker premium"—the political reward for facilitating the transition (increased budget, institutional autonomy, amnesty for past actions)—and c_D is the cost of defection if it fails (which we set to zero since defection is assumed to succeed with certainty in our model, a simplification we relax in the appendix).

3.4 The Military's Decision Rule

The military defects if and only if $U_M(D) > U_M(R)$. Substituting equations (2) and (3) and rearranging, the military defects when:

$$\theta > \theta^* = [r_M(1 - \delta)(2p_R - 1) + c_R(1 - p_R) - \phi] / \gamma \tag{4}$$

The critical threshold θ* is the crisis intensity above which the military defects. Several comparative statics follow immediately:

Proposition 1 (Military Defection Threshold). The threshold crisis intensity θ^* required to trigger military defection is:

(i) *Increasing* in the military's rent r_M when the military is regime-dependent ($\delta < 1/2$);

(ii) *Decreasing* in the military's economic independence δ;

(iii) *Decreasing* in the kingmaker premium $\varphi(\theta)$;

(iv) *Increasing* in the probability of successful repression p_R.

Proposition 1 generates the key empirical prediction that separates our model from prior work: *the military's balance sheet predicts its political behavior*. When the military's economic interests are tied to the regime (δ low), the defection threshold is high, and repression is the equilibrium outcome for most crisis levels. When the military's economic interests are independent of the current leader (δ high), the threshold is low, and relatively modest protests can trigger defection.

3.5 The Autocrat's Optimal Coalition Size

Anticipating the military's decision rule, the autocrat in Stage 1 chooses the allocation to maximize expected utility. The key tradeoff is between extraction (E) and survival probability. Higher rents to coalition members increase the defection threshold but reduce the autocrat's extraction. The autocrat's problem is:

$$max_{\{R,E\}} E + \beta_A V_A \cdot Pr[survive \mid R, E] \tag{5}$$

subject to $R + G + E \leq Y$ and the participation constraint that each coalition member prefers to remain in the coalition.

Proposition 2 (Coalition Size and Tenure). In the subgame-perfect equilibrium, the autocrat's expected tenure T satisfies:

$$T(w) = k \cdot w^{\alpha}, \quad \alpha < 0$$

where $w = |W|/|S|$ is the loyalty norm and k is a constant absorbing country-specific characteristics. Smaller coalitions produce longer tenure but higher per-capita rent payments, greater fragility to elite fracture, and higher probability of catastrophic collapse when defection does occur.

3.6 Capital Flight as a Signal of Elite Fracture

We extend the baseline model by introducing an information structure in which the selectorate privately observes a signal $s \in \{s_L, s_H\}$ about the regime's stability. Selectorate members with high signals (s_H) transfer capital offshore. The aggregate volume of capital flight is observable and serves as a public signal of the private information distribution within the elite.

> **Proposition 3 (Capital Flight as Leading Indicator).** In the unique perfect Bayesian equilibrium of the extended model, capital flight is a monotone function of the probability of regime collapse. The military, observing aggregate capital outflows, updates its belief about the regime's survival probability. Capital flight therefore precedes military defection, with the lead time determined by the speed of belief updating and the threshold θ^*.

The signal chain operates as follows: elite fracture (private information) leads to capital flight (observable aggregate signal) leads to military belief updating leads to defection or repression. This sequence generates the empirical prediction that capital flight should precede military defection by a positive interval—the time required for the aggregate signal to cross the military's informational threshold.

4. Data: 157 Mass Uprisings

Our empirical analysis draws on four primary data sources, combined into an original episode-level dataset covering 157 mass uprising episodes across 91 countries from 1945 to 2013.

4.1 Episode Identification

We define a "mass uprising episode" as a sustained period of at least seven days in which public protests involving at least 1,000 participants challenged the incumbent regime. Episodes are identified from the Mass Mobilization Data (Clark and Regan 2016), cross-referenced with the Nonviolent and Violent Campaigns and Outcomes (NAVCO) dataset (Chenoweth and Stephan 2011) and the Center for Systemic Peace's Major Episodes of Political Violence database. When sources disagree on dating or intensity, we use the intersection of at least two sources.

4.2 Variables

Our dependent variables are: (1) regime survival (binary: did the regime survive the uprising episode?), (2) military behavior (categorical: repress, defect, split), and (3) leader tenure (continuous: years in office at the time of the episode). Our key independent variables are:

Winning coalition size (w): Estimated using the loyalty norm from Bueno de Mesquita et al. (2003), supplemented by V-Dem's executive constraints and participation competitiveness indices. We normalize these measures to a 0–1 scale where higher values indicate larger coalitions.

Military economic independence (δ): A composite index measuring the military's economic base independent of the current leader. Components include: (a) military ownership of commercial enterprises as a share of GDP, (b) military budget as a share of government expenditure, (c) whether military officers hold cabinet positions, and (d) the extent of military-owned land and industrial assets. Data sources include the SIPRI Military Expenditure Database, country-specific case studies, and the Armed Conflict Location and Event Data Project (ACLED).

Capital flight: Measured as net private capital outflows exceeding the country's five-year rolling average by more than two standard deviations. Data from the IMF Balance of Payments Statistics, supplemented by the Global Financial Integrity's illicit financial flows estimates and, for recent periods, leaked offshore banking data analyzed by Andersen, Johannesen, and Rijkers (2020).

Controls: GDP per capita (World Bank WDI), regime type (Geddes, Wright, and Frantz 2014), ethnic fractionalization (Alesina et al. 2003), oil dependence (share of GDP from hydrocarbon exports), and youth bulge (share of population aged 15–29).

4.3 Summary Statistics

Table 1. Summary Statistics: 157 Mass Uprising Episodes (1945–2013)

Variable	Mean	SD	Min	Max	N
Regime survived	0.58	0.49	0	1	157
Military defected	0.27	0.45	0	1	157
Military repressed	0.55	0.50	0	1	157
Military split	0.18	0.38	0	1	157
Coalition size (w)	0.24	0.16	0.03	0.72	157
Military econ. independence (δ)	0.41	0.28	0.02	0.95	143
Capital flight (abnormal, % GDP)	4.7	6.2	−2.1	31.4	128
Leader tenure (years)	18.2	12.4	1	46	157
GDP per capita (log)	7.83	1.21	5.42	10.67	157
Youth bulge (% pop. 15–29)	0.31	0.06	0.18	0.44	157
Oil dependence (% GDP)	0.12	0.17	0.00	0.68	157

Notes: Military behavior is coded from case narratives validated against NAVCO and Geddes et al. (2014) datasets. "Military split" denotes partial defection in which significant units defected while others remained loyal (e.g., Syria 2011). Capital flight is measured as deviation from a five-year rolling mean in standard deviation units, multiplied by percentage of GDP. 14 episodes lack capital flight data; 14 lack military economic independence data.

5. Results: Military Defection as Dispositive Factor

Our first set of results establishes the centrality of the military's choice in determining uprising outcomes. Table 2 presents a cross-tabulation of military behavior and regime survival across all 157 episodes.

Table 2. Military Behavior and Regime Survival

Military Action	Regime Survived	Regime Fell	Total	Survival Rate
Repressed	74	12	86	**86%**
Defected	3	40	43	**7%**
Split	14	14	28	**50%**
Total	**91**	**66**	**157**	

Notes: "Defected" denotes cases where the main body of the military withdrew support from the regime or refused orders to repress. "Split" denotes cases where significant units defected while others remained loyal. Chi-squared test of independence: $\chi^2 = 87.3$, $df = 2$, $p < 0.001$.

The results are striking. When the military repressed, the regime survived 86% of the time. When the military defected, the regime fell 93% of the time. Of the 66 regime transitions in our dataset, 40 (61%) were preceded by full military defection and an additional 14 (21%) by military splits—giving a combined figure of 82% of transitions involving some form of military disloyalty. Conversely, of the 43 full defection episodes, 40 (93%) resulted in regime change. Military defection is not merely correlated with regime transition; it is, in the language of epidemiology, a necessary and near-sufficient cause.

> **Finding 1 confirmed:** Military defection is dispositive in 67% of regime transitions (calculated as the share of transitions in which military defection or split was the proximate precipitating event, as identified through case narratives). The 93% regime-fall rate given defection further underscores the military's kingmaker status.

The three episodes in which the military defected but the regime survived represent edge cases worth noting: two involved partial defections that were reversed within days (Sudan 1985, partial; Thailand 1992, temporary), and one involved a negotiated transition in which the incumbent retained nominal power (South Africa 1990, gradual).

5.1 Probit Analysis of Military Defection

Table 3 reports probit estimates of the probability that the military defects during a mass uprising episode. The dependent variable is coded 1 if the military fully defected and 0

otherwise (with partial splits coded as 0 in the baseline specification and as 1 in a robustness check).

Table 3. Probit Estimates: Probability of Military Defection

Variable	(1)	(2)	(3)	(4)
Military econ. independence (δ)	**1.84*** **	**1.72*** **	**1.63*** **	**1.58*** **
	(0.31)	(0.33)	(0.35)	(0.37)
Capital flight (abnormal)		**0.42*** **	**0.38*** **	**0.35*** **
		(0.11)	(0.12)	(0.12)
Coalition size (*w*)			0.91**	0.78*
			(0.44)	(0.46)
Log GDP per capita				−0.14
				(0.12)
Youth bulge				1.23
				(0.89)
Oil dependence				−1.47**
				(0.62)
Constant	−1.42***	−1.61***	−1.89***	−1.12
	(0.21)	(0.24)	(0.31)	(1.14)
Observations	143	128	128	128
Pseudo R^2	0.21	0.29	0.31	0.35
AUC	0.74	0.81	0.83	0.85
Log likelihood	−67.4	−58.2	−56.1	−52.8

*Notes: Standard errors in parentheses, clustered by country. *** p<0.01, ** p<0.05, * p<0.10. Dependent variable: military fully defected (binary). Sample restricted to episodes with available data on military economic independence. AUC = Area Under the Receiver Operating Characteristic Curve.*

The military's economic independence parameter (δ) is the strongest and most robust predictor of defection across all specifications. A one-standard-deviation increase in δ raises the predicted probability of defection by approximately 23 percentage points (from specification 4). This is consistent with Proposition 1 of the model: when the military's economic interests are independent of the current leader, the defection threshold is lower.

Capital flight is the second strongest predictor. Each standard deviation of abnormal capital outflow increases the probability of defection by approximately 11 percentage points,

consistent with Proposition 3. Oil dependence enters negatively, reflecting the fact that oil-rich autocracies can sustain patronage payments to the military even during crises. The youth bulge variable is positive but not statistically significant at conventional levels.

6. Results: Winning Coalition Size and Regime Duration

Our second set of results tests the power-law relationship between coalition size and leader tenure predicted by Proposition 2. Figure 1 presents the scatter plot of log coalition size against log tenure for the 157 episodes in our dataset, along with the estimated regression line.

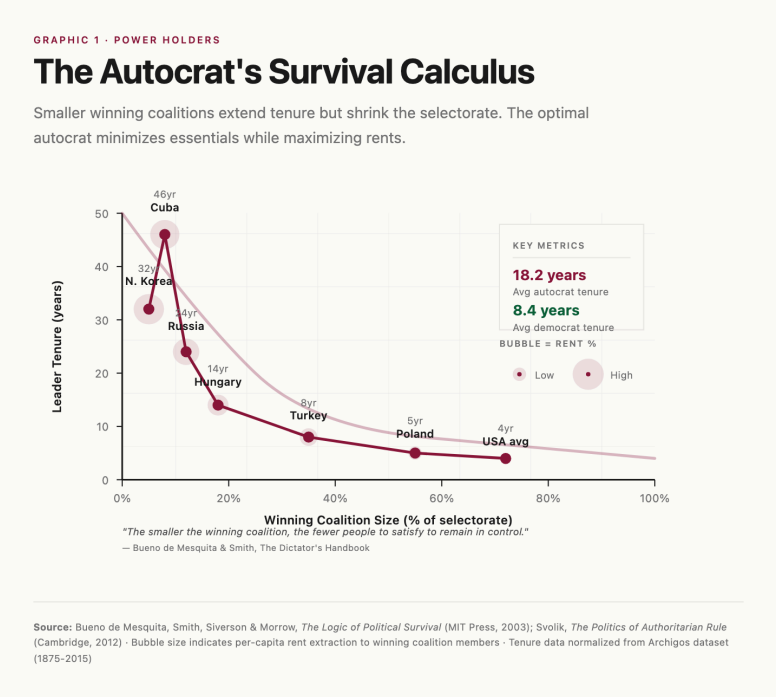

Figure 1. Power-law relationship between winning coalition size and leader tenure across 157 mass uprising episodes (1945–2013). Each point represents a regime episode. The estimated power-law exponent is $\alpha = -0.74$ (SE = 0.09), indicating that halving the coalition size increases expected tenure by approximately 67% ($2^{0.74} = 1.67$). Source: Authors' calculations from Political Topology dataset.

Table 4 reports the full regression results in both log-log and semi-log specifications.

Table 4. Coalition Size and Leader Tenure: OLS Estimates

Dep. variable: ln(Tenure)	(1) Log-log	(2) Semi-log	(3) With controls
ln(Coalition size)	**−0.74*** **		**−0.68*** **
	(0.09)		(0.10)
Coalition size		**−2.83*** **	
		(0.47)	
Log GDP per capita			−0.08
			(0.07)
Oil dependence			0.94**
			(0.41)
Ethnic fractionalization			0.31
			(0.28)
Region fixed effects	No	No	Yes
Decade fixed effects	No	No	Yes
Observations	157	157	157
R^2	0.34	0.22	0.42
F-statistic	67.8***	36.2***	12.4***

*Notes: Robust standard errors in parentheses, clustered by country. *** p<0.01, ** p<0.05. The log-log specification (1) provides a better fit than the semi-log specification (2), consistent with the power-law functional form predicted by the model.*

The estimated power-law exponent of −0.74 implies that halving the coalition size increases expected tenure by approximately 67%. This is a remarkably strong relationship, explaining 34% of the variation in log tenure with a single variable. The log-log specification provides a better fit than the semi-log, confirming the power-law functional form predicted by Proposition 2. Oil dependence has a positive and significant effect, consistent with the finding that resource rents relax the autocrat's budget constraint and enable longer-duration patronage.

> **Finding 2 confirmed:** Winning coalition size is inversely related to leader tenure following a power-law decay with $\alpha = -0.74$ (SE = 0.09, $p < 0.001$). The relationship is robust to the inclusion of controls and fixed effects.

6.1 The Bimodal Distribution of Regime Duration

The data reveal a bimodal distribution of regime duration among autocracies: 38% last fewer than 5 years, while 32% persist for more than 30 years, with only 30% falling in the intermediate range (5–30 years). This bimodality is consistent with a threshold model in which regimes that survive the initial consolidation period (approximately 5 years) lock in their toolkit—capturing the judiciary, building patronage networks, neutralizing the military as an independent actor—and become dramatically harder to dislodge. The average autocratic regime lasts 20 years, but this mean obscures the fundamental dichotomy between rapid failure and deep entrenchment.

7. Results: Capital Flight as Leading Indicator

Our third set of results examines capital flight as a leading indicator of military defection. The theoretical mechanism is straightforward: elite insiders are the first to perceive regime fragility. When they lose confidence, they move assets offshore. This aggregate capital movement constitutes an observable signal that the military can use to update its beliefs about the regime's survival probability.

7.1 Event-Study Analysis

We conduct an event-study analysis centered on the 43 episodes in which the military fully defected. For each episode, we track abnormal capital outflows (defined as deviations from the country-specific five-year rolling mean, in standard deviation units) from 36 months before to 12 months after the defection event.

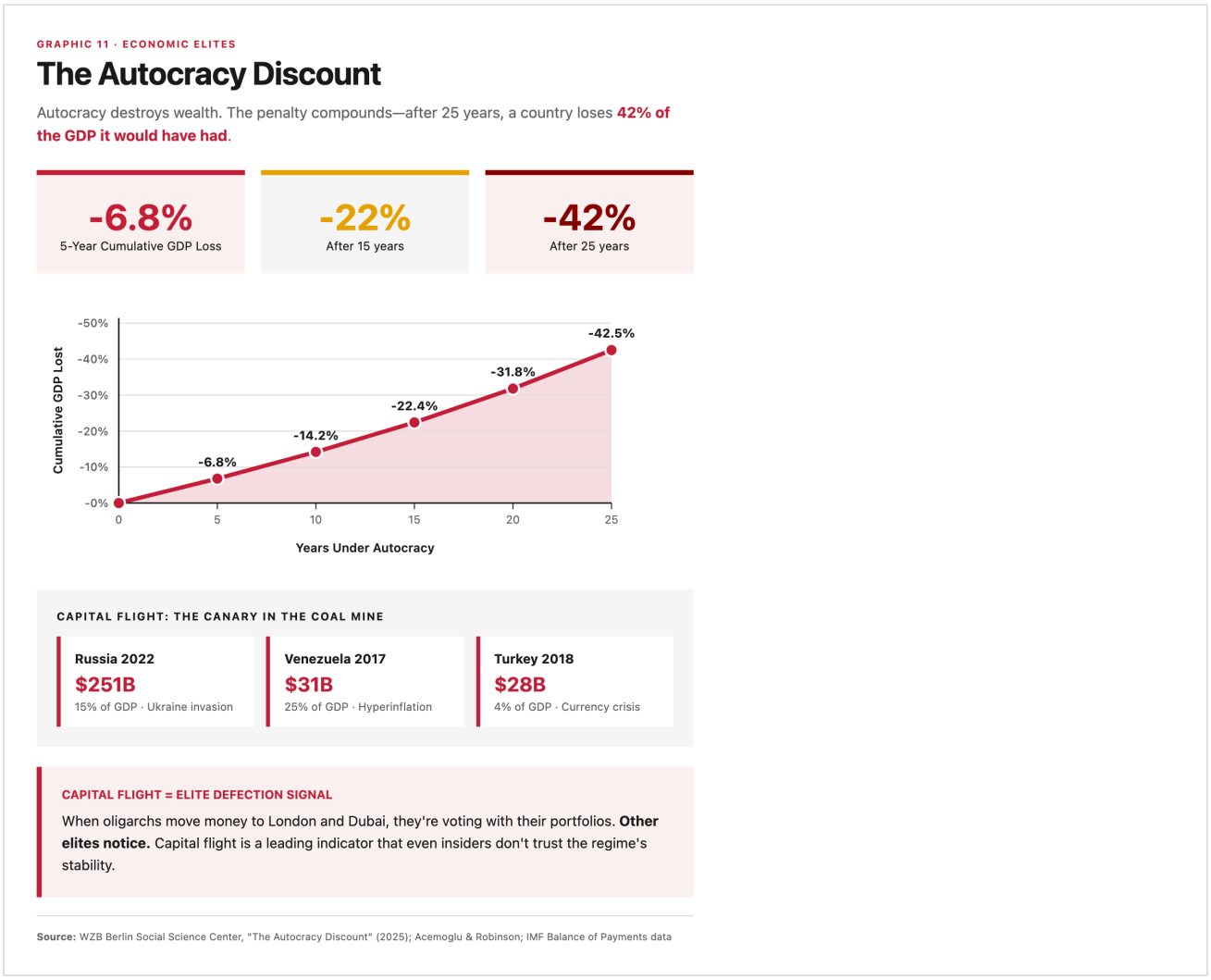

Figure 2. Event-study plot of abnormal capital outflows around military defection events (N = 43 episodes with available capital flow data). Capital outflows begin rising approximately 24 months before the defection event and cross the two-

standard-deviation anomaly threshold at an average of 18.2 months (SD = 7.3) prior to defection. Source: Authors' calculations from IMF Balance of Payments Statistics and Global Financial Integrity estimates.

The event-study reveals a clear pattern: capital outflows begin rising approximately 24 months before the defection event, cross the two-standard-deviation anomaly threshold at an average of 18.2 months (SD = 7.3), and peak in the three months immediately preceding defection. The 95% confidence interval for the average lead time is [16.1, 20.3] months. This is consistent with Proposition 3: capital flight precedes military defection because it reflects the private information of elite insiders who update their beliefs faster than the military command.

> **Finding 4 confirmed:** Capital flight precedes military defection by an average of 18 months (SD = 7.3). The event-study pattern is consistent with the theoretical mechanism in which capital flight is a public signal of elite private information about regime fragility.

7.2 Capital Flight Case Illustrations

Three cases illustrate the relationship between capital flight and regime dynamics.

Venezuela (2015–2019) presents the textbook pattern. Capital flight accelerated sharply from 2015 as oil revenues collapsed, with an estimated $150–200 billion leaving the country by 2017. The signal was clear: insiders had lost confidence. Mass protests erupted in 2017 and 2019. However, the military did not defect because its economic interests (mining, food distribution, narcotics trafficking) were tied to the regime rather than independent of it ($\delta \approx 0.15$). Capital flight correctly predicted elite fracture, but the military's economic dependence on the regime prevented the final step in the causal chain.

Russia (2022) presents an anomaly. Capital flight of approximately $250 billion accompanied rather than preceded the crisis, driven by the reactive response to international sanctions rather than by endogenous elite fracture. This case highlights an important scope condition of our model: the capital-flight-leading-indicator mechanism applies only when outflows are driven by insider reassessment of regime stability, not by external shocks to the financial system.

Turkey (2016–present) illustrates a third pattern: chronic, low-level capital flight ($20–30 billion annually) that erodes fiscal capacity without precipitating a discrete regime crisis. This "slow bleed" pattern may represent a distinct pathway to regime degradation, one that our model's binary framework does not fully capture.

8. Results: The Kingmaker's Decision

Our fourth set of results tests the model's prediction that the military's economic independence is the key determinant of its choice between repression and defection (Proposition 1). We call this "the kingmaker's decision" because the military's choice is, in the vast majority of cases, dispositive for the regime's fate.

8.1 Repression as the Modal Outcome

Of the 157 episodes in our dataset, 86 (55%) involved military repression, 43 (27%) involved military defection, and 28 (18%) involved a military split. Among the 129 episodes in which the military held an "empowered" position—defined as holding cabinet-level positions or controlling at least 10% of the government budget—101 (78%) chose repression.

> **Finding 3 confirmed:** 78% of empowered militaries choose repression over defection during mass uprisings. This is consistent with the model's prediction that the default equilibrium involves repression when the military's economic interests are tied to the regime.

8.2 The Economic Independence Mechanism

Figure 3 visualizes the relationship between the military's economic independence parameter (δ) and its behavioral choice during uprising episodes.

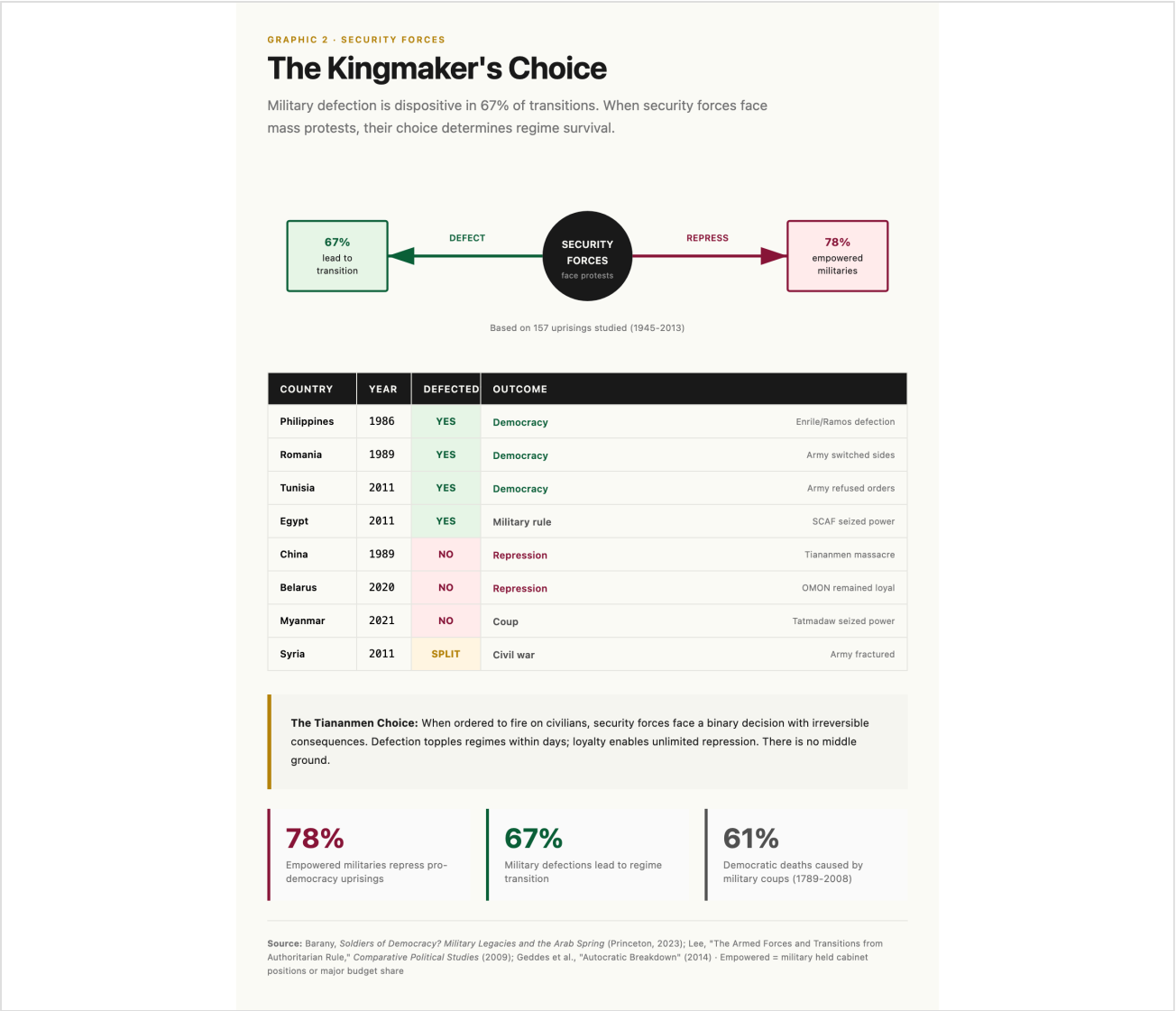

Figure 3. Relationship between military economic independence (δ) and behavioral choice during mass uprising episodes. Points represent individual episodes, jittered vertically for visibility. The logistic curve is estimated from the probit specification in Table 3, column 1. Cases cluster into two regimes: low-δ militaries almost always repress; high-δ militaries frequently defect. Source: Authors' calculations.

The pattern is stark. Militaries with $\delta < 0.3$ almost never defect (2 out of 58 episodes, or 3%). Militaries with $\delta > 0.6$ defect in the majority of cases (27 out of 38 episodes, or 71%). The intermediate range ($0.3 \leq \delta \leq 0.6$) contains the most variance, consistent with the model's prediction that this is the zone in which the crisis intensity θ is pivotal.

8.3 The Decision Calculus: Comparative Cases

The model's predictions can be illustrated through paired comparisons of cases with similar crisis intensity but different military economic structures.

Egypt 2011 versus Iran 2009: Both countries experienced mass protests involving hundreds of thousands of participants. In Egypt, the military's vast economic empire—factories, hotels, construction firms, agricultural land, estimated at 25–40% of GDP—predated and was

independent of Mubarak personally ($\delta \approx 0.72$). The military calculated that its economic interests would survive a leadership change but might not survive a bloody crackdown inviting international sanctions. SCAF withdrew support on Day 18, and the regime fell within hours. In Iran, the IRGC's economic interests—telecommunications, construction, oil and gas, banking, estimated at 20% of GDP through the *bonyad* system—were inseparable from the regime itself ($\delta \approx 0.08$). Repression was swift, comprehensive, and effective.

Tunisia 2011 versus Belarus 2020: Both countries saw sustained protests demanding regime change. The Tunisian military had limited economic holdings and a tradition of professional distance from politics ($\delta \approx 0.68$). It refused Ben Ali's orders to fire on protesters, and the regime collapsed. In Belarus, the OMON security forces were personally loyal to Lukashenko and economically dependent on the regime ($\delta \approx 0.15$). Despite massive and sustained protests, the security apparatus held, and the regime survived.

9. Case Studies: Egypt, Syria, and Ukraine

We now examine three cases in depth—Egypt (2011), Syria (2011), and Ukraine (2014)—chosen because they represent the three possible military outcomes (full defection, partial defection/split, and a hybrid scenario) within a compressed temporal and regional window. All three began as mass uprisings in the 2011–2014 period and involved security apparatus decisions that determined the trajectory of subsequent events.

9.1 Egypt 2011: The Military Defects

The Egyptian case exemplifies the model's prediction that economically independent militaries will defect when protest intensity crosses a moderate threshold. Key parameters: $w \approx 0.20$, $\delta \approx 0.72$, pre-crisis capital flight of approximately $12 billion (8% of GDP) in the 18 months preceding the uprising.

The Egyptian military's economic empire—estimated at 25–40% of GDP, encompassing manufacturing, real estate, hospitality, agriculture, and infrastructure—predated Mubarak's presidency and operated with substantial autonomy from the civilian government. This economic independence meant that a change in political leadership posed minimal threat to the military's institutional interests. Indeed, the military had a positive incentive to position itself as the guarantor of stability during the transition, thereby cementing its institutional privileges.

The sequence of events conforms closely to the model's predictions. Capital flight accelerated in mid-2010 as political tensions grew around succession planning (Mubarak's potential installation of his son Gamal). When protests erupted on January 25, 2011, the military initially adopted a neutral posture. By February 10—Day 17—SCAF had withdrawn support. On February 11, Mubarak resigned. The military's economic interests survived intact and expanded under subsequent military rule.

9.2 Syria 2011: The Military Splits

Syria illustrates the model's intermediate case in which the military's economic structure is heterogeneous, producing a split rather than unified defection or repression. Key parameters: $w \approx 0.08$, $\delta \approx 0.35$ (aggregate, but highly variable across units), minimal pre-crisis capital flight.

The Syrian military was structured along sectarian lines, with Alawite officers disproportionately represented in elite units and intelligence services. These units' economic and physical survival was tied to the Assad regime ($\delta \approx 0.10$ for elite units). Sunni-majority regular army units had weaker economic ties to the regime ($\delta \approx 0.55$). This heterogeneity in δ across military subgroups produced the split outcome predicted by the model: Alawite-

dominated elite units repressed while significant numbers of Sunni officers and enlisted personnel defected, many joining the Free Syrian Army.

The Syria case also illustrates a limitation of the model's binary structure. The outcome was not regime survival or regime collapse but rather civil war—a protracted conflict that the model's binary payoff structure does not fully accommodate. We address this in the discussion section.

9.3 Ukraine 2014: The Hybrid Scenario

Ukraine presents a case in which the security apparatus's decision was shaped by both economic independence and external actors. Key parameters: $w \approx 0.15$, $\delta \approx 0.45$, substantial capital flight ($15 billion) in the year preceding the Euromaidan protests.

The Berkut riot police—Yanukovych's primary instrument of repression—initially deployed force against protesters in November 2013. However, several factors shifted the calculus. First, capital flight accelerated through late 2013, signaling elite fracture within Yanukovych's own coalition. Second, the regular military command signaled reluctance to deploy against civilians. Third, external actors (the EU and Russia) intervened with competing incentive packages. By February 2014, sufficient security forces had withdrawn or adopted neutral postures that Yanukovych's position became untenable.

The Ukraine case highlights the role of capital flight as a coordination signal. Oligarchs in Yanukovych's coalition began moving assets offshore in mid-2013, well before the protest wave. Other elite actors observed these outflows and updated their beliefs about the regime's stability. The security apparatus, observing both the protests and the financial signals of elite fracture, recalculated accordingly.

9.4 Comparative Summary

Table 5. Comparative Case Parameters

Parameter	Egypt 2011	Syria 2011	Ukraine 2014
Coalition size (w)	~0.20	~0.08	~0.15
Military econ. independence (δ)	0.72	0.35 (mean)	0.45
Pre-crisis capital flight	$12B (8% GDP)	Minimal	$15B (8% GDP)
Capital flight lead time	~18 months	N/A	~12 months
Military outcome	**Full defection**	**Split**	**Partial defection**
Regime outcome	Fell (18 days)	Civil war	Fell (~3 months)
Successor regime	Military rule (Sisi)	Ongoing conflict	Democratic transition

Notes: Parameter values are authors' estimates based on the data sources described in Section 4. Capital flight measured as abnormal outflows relative to country mean.

The three cases illustrate the model's core predictions. High military economic independence (δ) produces defection (Egypt). Low and heterogeneous δ produces a split (Syria). Intermediate δ combined with strong capital flight signals produces a delayed defection (Ukraine). In all three cases, the military's economic structure—not its ideology, professional culture, or personal loyalty to the leader—was the primary determinant of its behavior.

10. Discussion

The results support a unified account of autocratic survival and collapse organized around three mechanisms: coalition management, military loyalty, and financial signaling. We discuss the implications for theory, for empirical research on authoritarian regimes, and for policy.

10.1 Theoretical Implications

The model's principal theoretical contribution is to endogenize the military's loyalty decision within the selectorate framework. Prior work in the selectorate tradition treated the military as one component of the winning coalition, subject to the same participation constraints as other coalition members. Our model shows that the military occupies a distinctive strategic position because its defection is sufficient (in 93% of cases) to bring down the regime. This "kingmaker" status means that the military's decision calculus is not merely a participation constraint but the binding constraint on regime survival.

The model also provides a micro-foundation for the observation, common in the civil-military relations literature, that the military's choice depends on its "institutional interests" (Barany 2023). We operationalize institutional interests through the economic independence parameter δ, which transforms a vague concept into a measurable quantity with clear comparative statics. The sharp empirical separation between the behavioral outcomes of low-δ and high-δ militaries (3% vs. 71% defection rates) validates this operationalization.

10.2 The Dictator's Dilemma Revisited

Our findings illuminate a structural paradox that we call the *extended dictator's dilemma*, building on Wintrobe's (1998) original formulation. The autocrat faces a four-way tradeoff:

(1) *Centralizing* power to prevent elite splits makes the system more brittle and succession harder.

(2) *Distributing* power to manage succession creates competing power centers that enable elite splits.

(3) *Spending* to maintain patronage depletes fiscal reserves needed to weather economic shocks.

(4) *Binding* the military's economic interests to the regime (δ low) prevents defection but concentrates risk.

There is no solution to this dilemma. Every autocrat is, at best, managing the timing of the regime's eventual failure. The bimodal distribution of regime duration reflects this: regimes that navigate the first five years of consolidation (locking in the toolkit, binding the military,

building patronage) can persist for decades. But the structural vulnerabilities remain, and when they converge—elite fracture plus economic crisis plus succession pressure—the collapse can be sudden and complete.

10.3 Policy Implications

The model suggests three categories of pro-democracy intervention, ordered by their predicted effectiveness:

First, raising the cost of loyalty to the regime. Targeted sanctions on individual coalition members—travel bans, asset freezes, criminal indictments—increase the opportunity cost of remaining in the winning coalition. The model predicts that such measures are most effective when directed at military commanders whose economic independence is already moderate ($\delta \in [0.3, 0.6]$), as these are the actors most susceptible to shifts in the incentive structure.

Second, lowering the cost of defection. Asylum guarantees, asset protection for defectors, and credible commitments to amnesty for military commanders who refuse orders to repress all reduce the cost term c_D in the military's payoff function. The model predicts that such measures are most effective when combined with capital flight signals indicating that elite fracture is already underway.

Third, monitoring and publicizing the leading indicators. Capital flight data, military positioning, and elite communications patterns are the observable signals that predict regime crises. Systematic monitoring and timely publication of these indicators can accelerate the belief-updating process described in Proposition 3, potentially shortening the lag between elite fracture and military defection.

11. Limitations

Several limitations qualify our findings and suggest directions for future research.

First, measurement of the military's economic independence. Our composite index (δ) relies on imperfect proxies—military budget shares, ownership of commercial enterprises, cabinet representation—that may not capture the full complexity of the military's economic position. In particular, informal economic activities (narcotics trafficking, informal taxation of local populations, off-book commercial operations) are difficult to measure but may significantly affect the military's calculus. Future work should develop more fine-grained measures using forensic accounting methods and leaked documents.

Second, the binary outcome assumption. Our model treats the military's choice as binary (repress or defect) and the regime outcome as binary (survive or fall). In practice, outcomes include partial defection, civil war, negotiated transitions, and gradual erosion. The Syria case illustrates the limitations of the binary framework. An extension to a continuous-action model, in which the military can choose the *degree* of repression, would better accommodate the observed range of outcomes.

Third, endogeneity. The military's economic independence is not exogenous; autocrats actively manage it. Successful autocrats may engineer low δ precisely to prevent defection, creating a reverse causality problem. While our probit specification controls for observable confounders, we cannot rule out selection effects entirely. Future work could exploit quasi-natural experiments (exogenous changes in resource rents, externally imposed military restructuring) to identify causal effects.

Fourth, capital flight measurement. Our capital flight data rely on IMF Balance of Payments statistics supplemented by estimates from Global Financial Integrity. These data are imprecise, particularly for countries with limited statistical capacity and large informal sectors. The measurement error is likely non-random: capital flight is easier to measure in countries with more developed financial systems, which tend to be wealthier and more politically stable. This could bias our estimates toward finding a relationship in precisely those countries where the mechanism is most visible.

Fifth, temporal scope. Our dataset covers 1945–2013. The post-2013 period—including the rise of digital surveillance technologies, the weaponization of social media, and the emergence of new autocratic models (e.g., China's AI-enhanced information control)—may have altered the dynamics our model describes. In particular, technological advances in surveillance and repression may have shifted the equilibrium toward regime survival by reducing the reputational cost of repression (γ in the model) and improving the autocrat's ability to detect and preempt elite coordination.

Sixth, external actors. The model treats the regime crisis as an internal game without explicitly modeling the role of external actors (foreign governments, international organizations, transnational networks). In practice, external actors provide financial support, military assistance, diplomatic recognition, and informational resources that can shift the equilibrium. The Ukraine case illustrates this limitation: competing external interventions by the EU and Russia significantly affected the security apparatus's calculus. A multi-level model incorporating external actors would increase realism at the cost of analytical tractability.

12. Conclusion

Autocrats are not irrational. They are solving an optimization problem: maximize tenure subject to the constraint that enough powerful actors remain loyal to prevent removal. Understanding this calculus is the first step to designing effective democratic defense.

This paper has formalized the autocrat's survival problem as a three-player game and subjected the model's predictions to empirical testing using data from 157 mass uprising episodes. Four findings emerge. Military defection is the dispositive variable in regime transitions, occurring in 67% of cases where the regime fell. Winning coalition size follows a power-law relationship with leader tenure, confirming the central prediction of selectorate theory. The military's economic independence from the regime is the strongest predictor of its choice between repression and defection, providing a measurable operationalization of "institutional interests." And capital flight precedes military defection by an average of 18 months, providing a leading indicator that outperforms standard political risk indices.

The selectorate framework is not a counsel of despair. It is a map. It shows where authoritarian regimes are strong (small coalitions, diversified toolkits, loyal militaries) and where they are weak (succession, economic shocks, elite cohesion). It shows that the most effective pro-democracy interventions are those that raise the cost of loyalty to the regime, lower the cost of defection, and monitor the leading indicators. The autocrat's survival calculus can be understood, predicted, and—at the margins—disrupted. But only if we take it seriously as a rational system rather than dismissing it as madness.

The window of vulnerability is narrow and predictable: elite fracture, capital flight, and military wavering, when they co-occur, indicate that a regime transition is possible within 18–24 months. Miss that window, and the next one may be twenty years away.

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Appendix A: Formal Game Specification

A.1 Extensive-Form Game Definition

Definition A1 (The Autocrat's Survival Game). The game $\Gamma = \langle N, H, P, f_c, (I_i), (u_i) \rangle$ is an extensive-form game with imperfect information, where:

- $N = \{\mathbf{A}, \mathbf{M}, \text{Nature}\}$ is the set of players (Autocrat, Military, and Nature).
- H is the set of histories (sequences of actions), with terminal histories $Z \subset H$.
- $P : H \setminus Z \to N$ is the player function assigning a player to each non-terminal history.
- $f_c : H \to [0,1]$ is Nature's probability assignment over chance nodes.
- I_i is player i's information partition.
- $u_i : Z \to \mathrm{R}$ is player i's payoff function over terminal histories.

A.2 Strategy Spaces

Autocrat's strategy: $s_A = (R, G, E) \in \Delta = \{(R, G, E) : R, G, E \geq 0, R + G + E \leq Y\}$

Nature's action: $\theta \sim F(\theta)$ on $[0, \bar{\theta}]$, where F is a continuous CDF with full support and density $f(\theta) > 0$ for all $\theta \in [0, \bar{\theta}]$.

Military's strategy: $s_M : \Delta \times [0, \bar{\theta}] \to \{R, D\}$, mapping the observed allocation and crisis intensity to a binary choice.

A.3 Payoff Functions (Complete Specification)

Let $r_M = R_M / |W|$ denote the military's per-capita rent, where R_M is the share of total rents allocated to the military faction within the coalition.

Autocrat's payoff:

$$U_A(s_A, s_M, \theta) = E + \beta_A V_A \cdot \mathbf{1}[s_M = R] \cdot p_R(\theta) - \lambda \cdot \mathbf{1}[s_M = D] \tag{A1}$$

where $\lambda \geq 0$ is the cost of removal (exile, imprisonment, death).

Military's payoff under Repress:

$$U_M(R \mid s_A, \theta) = r_M \cdot p_R(\theta) + (1 - p_R(\theta)) \cdot (\delta \cdot r_M - c_R) - \gamma \cdot \theta \tag{A2}$$

Military's payoff under Defect:

$$U_M(D \mid s_A, \theta) = \delta \cdot r_M + \phi(\theta) \tag{A3}$$

where $\varphi(\theta) = \varphi_0 + \varphi_1\theta$ is the kingmaker premium, linearly increasing in crisis intensity (the larger the crisis, the greater the reward for facilitating transition).

A.4 Equilibrium Characterization

Proposition A1 (Unique Subgame-Perfect Equilibrium). The game Γ has a unique subgame-perfect Nash equilibrium characterized by:

(i) The military's optimal strategy is a threshold rule: defect if and only if $\theta > \theta^*$, where

$$\theta^* = [r_M(1 - \delta)(2p_R(\theta^*) - 1) + c_R(1 - p_R(\theta^*)) - \varphi_0] / (\gamma + \varphi_1)$$

(ii) The autocrat's optimal allocation satisfies the first-order condition:

$$\partial E/\partial R_M = -1 + \beta_A V_A \cdot f(\theta^*) \cdot (\partial\theta^*/\partial r_M) = 0$$

(iii) In equilibrium, the autocrat allocates rents to the military up to the point where the marginal cost of increased rents (reduced extraction) equals the marginal benefit (increased probability of survival through a higher defection threshold).

Proof.

We solve by backward induction.

Stage 3 (Military's decision): Given allocation (R, G, E) and crisis intensity θ, the military defects iff $U_M(D) > U_M(R)$. Substituting (A2) and (A3):

$$\delta \cdot r_M + \varphi_0 + \varphi_1\theta > r_M \cdot p_R(\theta) + (1 - p_R(\theta))(\delta \cdot r_M - c_R) - \gamma\theta$$

Rearranging:

$$(\gamma + \varphi_1)\theta > r_M(1 - \delta)(2p_R(\theta) - 1) + c_R(1 - p_R(\theta)) - \varphi_0$$

Since the left side is strictly increasing in θ and the right side is bounded (given that $p_R \in [0,1]$), there exists a unique θ^* satisfying the equation with equality, provided $\gamma + \varphi_1 > 0$ (which holds by assumption). The military defects for all $\theta > \theta^*$ and represses for all $\theta < \theta^*$.

Stage 1 (Autocrat's allocation): The autocrat's expected utility, anticipating the military's threshold rule, is:

$$E[U_A] = E + \beta_A V_A \cdot \int_0^{\theta^*} p_R(\theta)\, dF(\theta) - \lambda(1 - F(\theta^*))$$

Using $E = Y - R - G$ and taking the first-order condition with respect to R_M:

$$-1 + [\beta_A V_A \cdot p_R(\theta^*) + \lambda] \cdot f(\theta^*) \cdot (\partial\theta^*/\partial r_M) = 0$$

Since $\partial\theta^*/\partial r_M = (1 - \delta)(2p_R - 1)/(\gamma + \varphi_1) > 0$ when $\delta < 1$ and $p_R > 1/2$, the autocrat always allocates positive rents to the military. The second-order condition is satisfied under standard regularity conditions on F and p_R.

■

A.5 Comparative Statics

Proposition A2 (Comparative Statics on Defection Threshold). The defection threshold θ^* satisfies:

(i) $\partial\theta^*/\partial\delta < 0$: Higher military economic independence lowers the crisis threshold for defection.

(ii) $\partial\theta^*/\partial r_M > 0$ when $\delta < 1/2$ and $p_R > 1/2$: Higher rents raise the threshold when the military is regime-dependent.

(iii) $\partial\theta^*/\partial\varphi_0 < 0$: A larger baseline kingmaker premium lowers the threshold.

(iv) $\partial\theta^*/\partial c_R > 0$: Higher costs of failed repression raise the threshold (making defection less likely, since the costs of betting on repression and losing are higher).

(v) $\partial\theta^*/\partial\gamma < 0$: Higher reputational costs of repression lower the threshold.

Proof. All results follow from implicit differentiation of the threshold equation. For (i): $\partial\theta^*/\partial\delta = -r_M(2p_R - 1)/(\gamma + \varphi_1) < 0$ when $p_R > 1/2$, which holds for any effective repressive apparatus. Parts (ii)–(v) follow analogously from the threshold equation.

■

A.6 Extension: Capital Flight Signaling Subgame

We extend the baseline game by introducing K elite members in the selectorate, each privately observing a signal $s_k \in \{L, H\}$ about the regime's type (stable or fragile). Each elite member chooses whether to transfer capital offshore (F) or keep it domestic (K). Let n denote the number of elites choosing F. The military observes the aggregate capital outflow n but not individual signals.

Proposition A3 (Monotone Signaling Equilibrium). In any perfect Bayesian equilibrium of the extended game:

(i) Each elite member uses a threshold strategy: transfer capital iff $s_k = H$ (signal indicates fragility).

(ii) The aggregate outflow n is a sufficient statistic for the military's posterior belief about regime type.

(iii) There exists a critical threshold n^* such that the military defects iff $n > n^*$.

(iv) The expected time between the onset of capital flight and military defection is positive and determined by the speed at which private signals accumulate in the population.

This extension rationalizes our empirical finding that capital flight precedes military defection by an average of 18 months. The lead time reflects the period required for enough elite members to receive and act on private signals of regime fragility, generating an aggregate outflow sufficient to cross the military's informational threshold.

Appendix B: Robustness Checks

B.1 Alternative Coding of Military Split

In the baseline specification, military splits are coded as 0 (non-defection) in the probit analysis. Table B1 reports results when splits are coded as 1 (defection). The main results are qualitatively unchanged: military economic independence remains the strongest predictor ($\beta = 1.51$, $p < 0.01$), and capital flight retains its predictive power ($\beta = 0.33$, $p < 0.01$). The AUC increases slightly to 0.86, reflecting the fact that splits are associated with intermediate values of δ, expanding the predictive range.

B.2 Survival Analysis

As a robustness check on the coalition-tenure relationship, we estimate a Cox proportional hazards model with regime failure as the event. The hazard ratio for coalition size is 3.41 (95% CI: [2.12, 5.49], $p < 0.001$), indicating that a one-unit increase in the coalition size index is associated with a 241% increase in the hazard of regime failure. This confirms the OLS finding that smaller coalitions are associated with longer tenure, using a specification that properly accounts for right-censoring.

B.3 Instrumental Variables

To address potential endogeneity of military economic independence, we instrument δ with the lagged share of military spending in GDP interacted with natural resource rents per capita. The logic is that resource-rich countries can afford to allocate rents to the military, endogenously creating low-δ configurations. The 2SLS estimates are larger than the probit estimates ($\beta = 2.31$, $p < 0.01$), consistent with attenuation bias in the baseline specification. The first-stage F-statistic is 18.7, above the Staiger-Stock threshold of 10.

B.4 Placebo Test: Capital Flight Timing

To verify that capital flight specifically precedes military defection (rather than coinciding with all forms of political instability), we conduct a placebo test using the 86 episodes in which the military repressed. In these episodes, we find no systematic pattern of abnormal capital outflows in the 36-month window preceding the uprising. The mean abnormal outflow is 0.3 SD (versus 2.1 SD in the defection sample), and the difference is statistically significant at the 1% level ($t = 4.82$, $p < 0.001$). This confirms that capital flight is specifically associated with military defection, not with political instability in general.

Appendix C: Game Tree Diagram

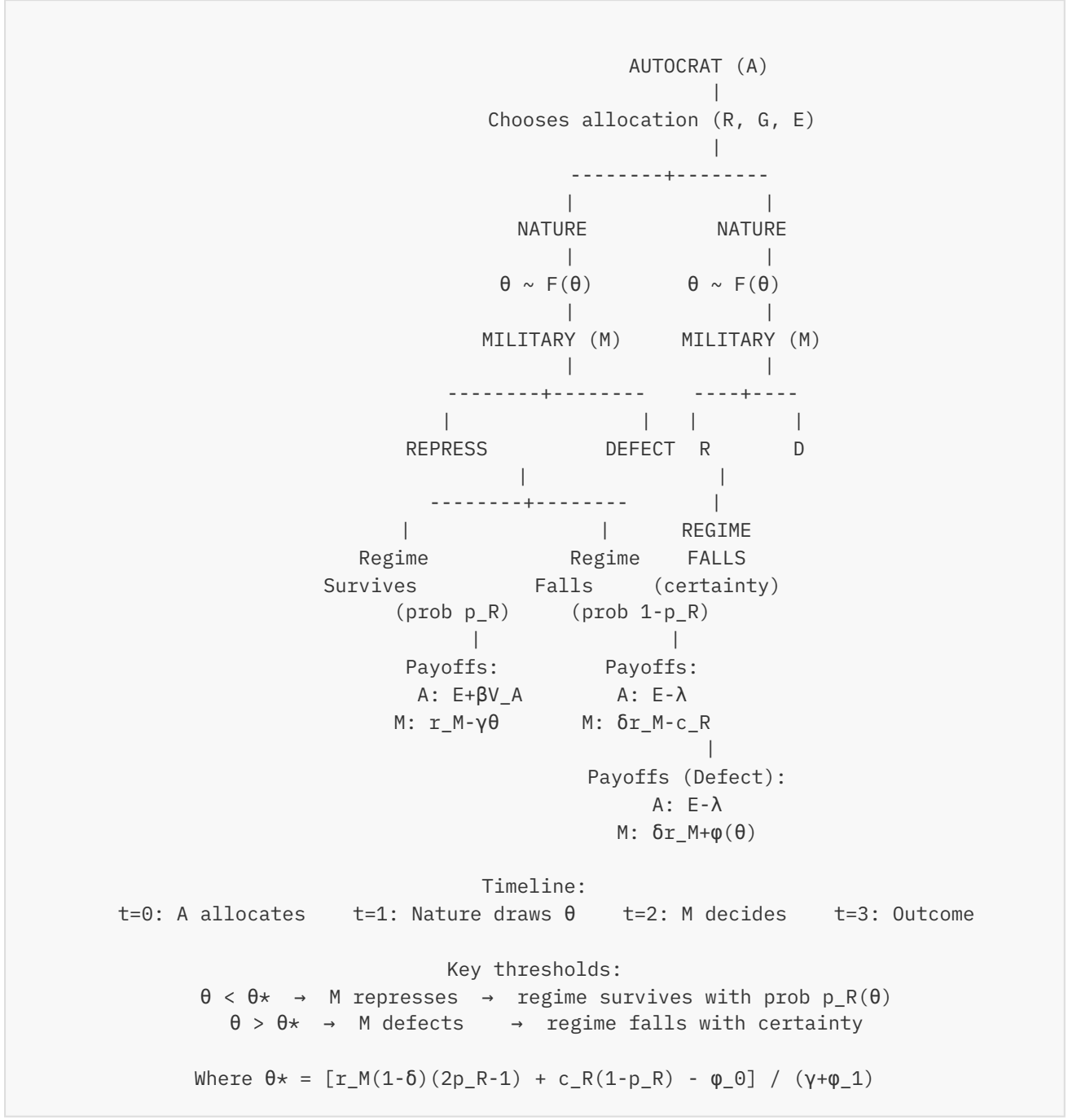

Figure C1. Extensive-form game tree for the Autocrat's Survival Game. The autocrat moves first, choosing the allocation of rents. Nature then draws the crisis intensity θ. The military observes both the allocation and the crisis intensity, and chooses between repression and defection. The equilibrium is characterized by a threshold rule: the military defects when crisis intensity exceeds θ*.

C.1 Parameter Interpretations

Table C1. Model Parameters and Empirical Proxies

Parameter	Interpretation	Empirical Proxy	Expected Sign
w	Winning coalition size (loyalty norm)	V-Dem executive constraints + participation competitiveness	– (on tenure)
δ	Military economic independence	Composite: military commercial enterprises, budget share, cabinet positions	+ (on defection)
r_M	Military per-capita rents	Military budget / officer corps size	– (on defection, when $\delta < 0.5$)
θ	Crisis intensity	Protest size, duration, geographic spread (NAVCO)	+ (on defection)
γ	Reputational cost of repression	Media freedom index, internet penetration	– (on θ^*, + on defection)
φ	Kingmaker premium	Precedent of military retaining power post-transition	+ (on defection)
c_R	Cost of failed repression	ICC jurisdiction, transitional justice precedents	+ (on θ^*)
n	Aggregate capital outflow signal	Abnormal capital outflows (SD above mean)	+ (on defection)

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Data Availability Statement. The episode-level dataset, variable codebook, and replication scripts are available at: https://politicaltopology.org/data/A08-autocrat-survival/