Forecasting Regime Breakdown

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Abstract

Political regimes breaking down can be momentous events, with ripple effects for societies and economies at home and abroad. Being able to forecast the occurrence of regime breakdown would therefore be of great interest and potential importance to organizations and other actors who want, e.g., to forestall coups, aid democratization processes, or safeguard civilians in the run-up to or aftermath of a regime breakdown. In this paper, we build and present high-performing predictive models to forecast breakdowns of political regimes in countries across the world. More specifically, we construct models that give monthly forecasts for aggregate regime breakdowns as well as for four particularly important sub-types of breakdowns, namely coups d'état, self-coups, popular uprisings, and incumbent-guided liberalization. Leveraging the Historical Regimes Data (HRD), we can base our predictions on more than 230 years of political history and over 2000 regimes changes, recorded with high temporal resolution and nuanced information on exactly how they broke down. As our predictive baseline, we train a set of machine-learning models using the predictors specified by Djuve, Knutsen and Wig (2020), which are a restrictive set of features selected for their theoretical relevance to the regime change literature. Thereafter, we compare the predictive performance of our baseline model to those of various thematic models trained with the same classifiers. Finally, we use ensemble methods to produce true forecasts of the likelihood of regime breakdown for all countries, globally, in the coming three years.

1 Introduction

Two decades into the 21st century, political scientists are grappling with questions concerning the resilience of democracies (Przeworski, 2019; Levitsky and Ziblatt, 2018; Skaaning, 2020), a recent uptick in state-based wars (PRIO report 2023), and the persistent nature of both reform-driven (Djuve and Knutsen, 2023; Cleary and Öztürk, 2022) and coup-driven modes of regime breakdown(Svolik, 2015).

When regimes break down, it might come as a shock, both to the citizens of the polity in which it takes place and to the international community, causing ripple effects across borders. The aftermath of such breakdowns can involve economic instability, social unrest, and humanitarian crises. As a result, understanding and, if possible, predicting the occurrence of regime breakdowns could be of crucial use for scholars and policymakers alike.

While some have posited that regime changes driven by incumbents would outnumber coups in the 21st century, coups have remained an important driver of regime change in recent years. The dynamics of regime breakdowns are multifaceted, involving a complex interplay of political, social, and economic factors. Identifying patterns and developing predictive models for these events could offer valuable insights for organizations and governments seeking to mitigate the impact of such occurrences.

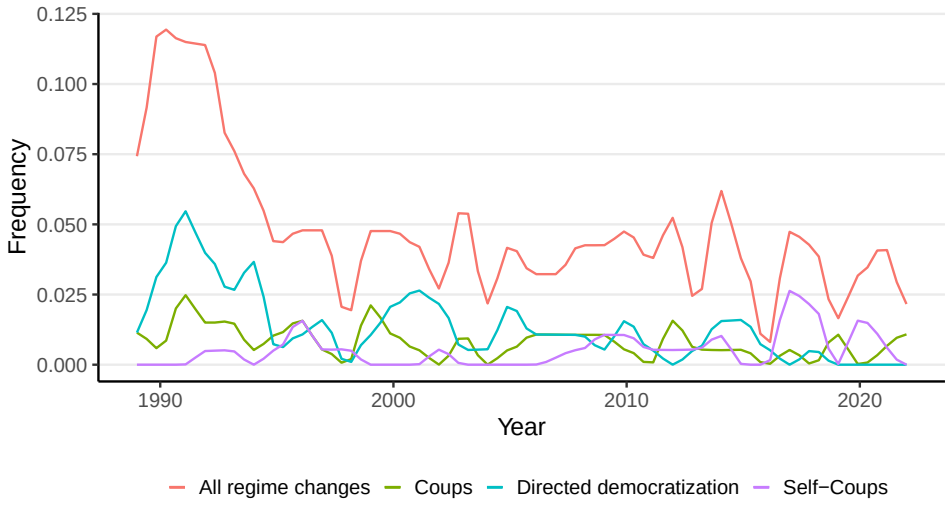
Following Geddes, Wright and Frantz (2014), we define a political regime as "the set of formal and informal rules for selecting leaders and keeping them in power." Regimes break down when these formal or informal rules are fundamentally altered, either through internal processes where incumbents alter the regime from within or external interventions like popular uprisings and coups d'état. The variety of pathways through which regimes can break down adds another layer of complexity to the prediction challenge.

Prediction in social science is an arduous task because the phenomena we are interested in foreseeing are so complex. However, advancements in data availability, computational power, and machine learning techniques offer new opportunities to develop more accurate and nuanced predictive models for regime breakdown. In this paper, we delve into the task of forecasting political regime breakdowns, leveraging the extensive historical data from the Historical Regimes Data (HRD) (Djuve, Knutsen and Wig, 2020) spanning over 200 years and state-of-the-art machine learning techniques to provide insights into the likelihood of such events occurring in the coming years.

In this study, we undertake the development and presentation of advanced predictive models designed to anticipate the breakdowns of political regimes worldwide. Our approach involves the construction of models that offer monthly forecasts not only for aggregate regime breakdowns but also for four particularly influential sub-types of breakdowns: coups d'Ã©tat, self-coups, popular uprisings, and incumbent-guided liberalization. Drawing on the wealth of data provided by HRD, our predictions are anchored in a historical context encompassing over 230 years of political evolution and more than 2000 instances of regime changes. The HRD, characterized by high temporal resolution and nuanced information on the precise mechanisms leading to regime breakdowns, serves as a strong foundation for our analytical framework.

To establish a baseline for our predictions, we employ machine-learning models trained with the predictors delineated by Djuve, Knutsen and Wig (2020). These predictors constitute a carefully curated set of features chosen for their theoretical relevance within the regime change literature. Following the training of our baseline model, we embark on an assessment of its predictive efficacy, comparing its performance against various thematic models. Finally, adopting ensemble methods, we synthesize a comprehensive set of forecasts, providing a

Figure 1: Yearly frequencies of regime deaths since 1989 (Loess smoother, span of 0.1) due to coups, uprisings, international war, guided liberalization, and self-coups 1989–2022.



nuanced understanding of the likelihood of regime breakdowns on a global scale over the ensuing three years.

In the subsequent sections, we briefly draw up trends in current and historical waves of regime breakdown, outline our methodology, present the data used for analysis, and discuss the key features and predictors identified by Djuve, Knutsen and Wig (2020). We then present results and compare the performance of our baseline model to various thematic models, exploring the nuances of different types of regime breakdowns, including coups d'état, self-coups, popular uprisings, and incumbent-guided liberalization. Finally, we employ ensemble methods to generate comprehensive forecasts for the likelihood of regime breakdowns globally over the next three years.[1]

[1] This whole part is TBA.

2 Current and historical waves of regime breakdown

In the years following the Cold War, the world has experienced a period of relatively low levels of global regime instability. Yet, there is no apparent tendency for the last, e.g. 5 years, to be any more stable than the last half of the 1990s. As illustrated by Figure 1, both regime breakdowns overall, coups, self-coups and directed democratizations, have remained relatively equally common following the increased period of turmoil connected to the fall of the Soviet Union. If we focus on the purple line in Figure 1, showing the prevalence of self-coups, 2017 and 2018 stand out as particular years for which self-coups actually made up more than half of all regime changes recorded for those two years. This is a historical abnormality. Furthermore, at the time of writing, 2023 has seen two military coups, in Gabon and Niger, and two self-coup like transformations, in Mali and the Central African Republic. As illustrated by the blue line, denoting prevalence of directed democratization, this mode of breakdown has fallen below both coups and self-coups in very recent years.

Expanding the temporal scope, Figure 2 (again based on the most recent update of HRD) uses the end type-categories, that is how the regimes break down, to depict the evolution of four distinct modes of regime breakdown from 1789 to 2016. The visual representation of coups, uprisings, interstate wars, and guided liberalization reveals historical wave-like patterns in the occurrence of regime breakdowns associated with each mode. Notably, the authors emphasize the non-monotonic nature of these waves, challenging simplistic narratives. For instance, while coups have declined in the post-colonial era, they were relatively frequent in the 1840s, 50s, and the 1930s. Viewing the more recent years in relation to this larger temporal scope underlines the relative stability of this

Figure 2: Yearly frequencies of regime deaths (Loess smoother, span of 0.3) due to coups, uprisings, international war, guided liberalization, and self-coups 1789–2022.

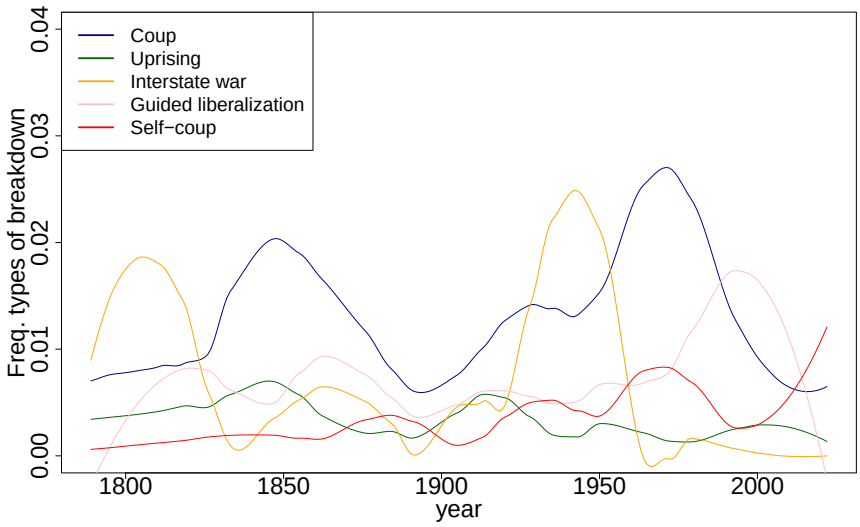
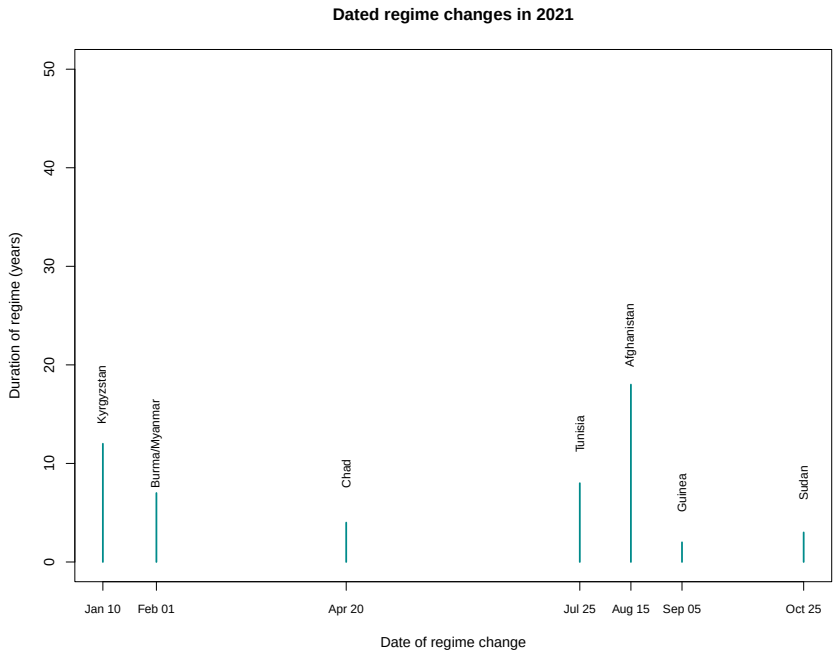


Figure 3: Regime end dates in 2021

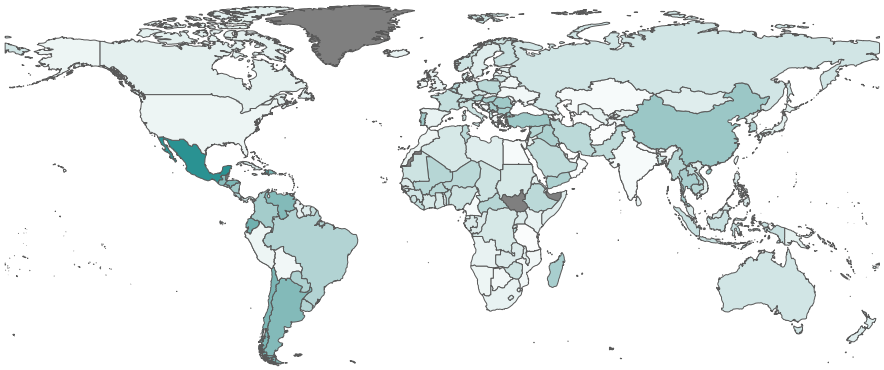


period, although the tendency for self-coups to outnumber directed liberalization leaves cause for concern.

In addition to modes of breakdown, an important aspect of analyzing regime instability is the duration of which different regimes have existed prior to breakdown. Figure 3 provides a granular view of the data, illustrating dates of all regime changes taking place during 2021 (x-axis), along with the duration of each regime prior to breakdown (y-axis). Four out of seven breakdowns, and all of the regimes with the shortest durations, occurred on the African continent. The longest regime that ended, was the US/UN-mediated regime in Afghanistan, which broke down into the current Taliban regime on August 15th, 2021, after 20 years of international presence.

In their presentation of the Historical Regimes Data, Djuve, Knutsen, and

Figure 4: Number of recorded regime changes, 1789–2016



Wig (2020) describe the main global trends of regime breakdown across the last two centuries. In their account, the authors highlight the substantial geographical variation in the frequency of regime changes within HRD. This variation, partially attributed to the differing lengths of time series and the historical events shaping political trajectories, is evident in Figure 4, which is based on the most recent update of HRD (updated 2023). Central and South America, West Africa, the Arabian peninsula, South Asia, and Southern Europe exhibit a notable concentration of recorded regimes, while North America, North Europe, and East Asia experience relatively fewer regime changes. This geographical lens offers insights into the uneven distribution of political stability across the globe.

3 Forecasting setup

As our predictive baseline, we train a set of machine-learning models using the predictors specified by Djuve, Knutsen and Wig (2020), which are a restrictive set of features selected for their theoretical relevance to the regime change literature. Thereafter, we compare the predictive performance of our baseline model to those of various thematic models trained with the same classifiers. Finally, we use ensemble methods to produce true forecasts of the likelihood of regime breakdown for all countries, globally, in the coming three years.

In the following sections we provide key descriptive details on the components of HRD, discuss the three included, theoretically driven, predictors, and describe our predictive baseline as well as the performance metrics we will use to evaluate our baseline.

3.1 HRD descriptive details

The regime definition employed by Djuve, Knutsen, and Wig (2020) opens avenues for a comprehensive and detailed examination of countries' regime his-

tories, but is not immune to challenges. Several questions arise regarding the judgment of substantial rule changes and the effective capture of changes to informal rules, which are inherently challenging to observe. To address these challenges, Djuve, Knutsen, and Wig (2020) developed various strategies, constructing heuristics for identifying substantial rule changes and ensuring consistent coding of regime breakdowns across time and space. The online appendix delves into the bulk of these discussions, particularly addressing complex cases like self-coups, incumbent-guided regime transitions, cases of de-colonization, and instances where a polity splits into multiple entities.

HRD incorporates variables on regime start and end dates, as well as modes of breakdown. With 14 categories in both single-selection and multiple-selection formats, the modes of breakdown capture the diverse processes leading to and relevant for regime breakdown. Additionally, dichotomous variables account for uncertainty in date variables and the occurrence of interregnum periods. HRD codes regime breakdowns and origins down to the day, providing a detailed chronological account of even short-lived and transitory regimes. The dataset covers 197 polities, including sovereign states, semi-autonomous polities, and colonies.

Despite the inclusion of various polities, HRD acknowledges limitations, such as the under-representation of colonies, especially before 1900, and the absence of certain micro-states in the Pacific or Caribbean. It emphasizes the need for cautious interpretation of descriptive patterns and regression results, considering HRD's current coverage and potential biases in historical data collection.

3.2 Set of covariates

The extensive literature on regime breakdown encompasses various determinants spanning international-systemic, geographical, demographic, cultural, economic,

and political-institutional factors. Our empirical focus narrows down to three crucial determinants, with two economic and one political-institutional factor taking center stage: income level, level of democracy and economic crisis.

One prominent line of research scrutinizes how "economic development" shapes regime change, as exemplified by classic studies on democratization, such as Lipset (1959). While early scholars theorized that economic development would erode the legitimacy of autocratic regimes, recent studies (e.g., Przeworski and Limongi, 1997; Acemoglu, 2008) have failed to consistently establish a clear link between GDP per capita and democratizing regime changes. However, nuanced analyses, like that of Kennedy (2010), reveal that high-income levels stabilize all types of regimes but increase the likelihood of a transition to democracy when an autocratic regime breaks down. This intricate relationship challenges simplistic narratives, highlighting the multifaceted role of income in shaping regime stability.

Another determinant scrutinized in the literature is political institutions, with a focus on regimes displaying a combination of democratic and autocratic features. Studies (e.g., Gates et al., 2006; Goldstone et al., 2010; Knutsen and Nygård, 2015) suggest that regimes situated in the middle of the autocracy-democracy spectrum are more prone to breakdown than relatively autocratic or democratic regimes. This vulnerability stems from their inability to repress and deter opposition like autocracies or accommodate opposition through institutionalized channels like democracies. Additionally, mixed regimes have been found to experience more civil wars (Hegre et al., 2001) and face higher risks of riots and coups (Bodea, Elbadawi and Houle, 2017), contributing to the understanding of the intricate relationship between political institutions and regime stability.

Turning to triggers of regime breakdown, the "revolutionary-threat" thesis,

formalized by Acemoglu and Robinson (2006), emphasizes sudden shocks in the capacity of opposition to mobilize and threaten regimes from outside. Revolutionary threats, often triggered by economic crises, have historically prompted democratization in European countries. Economic crises, marked by a sharp drop in economic growth, induce grievances among opposition groups and key regime supporters. These crises serve as "coordination signals" for opposition actors, facilitating collective action against the regime. Various studies (e.g., Przeworski and Limongi, 1997; Hegre and Sambanis, 2006; Knutsen, 2014; Gassebner, Gutmann and Voigt, 2016) underscore the strong correlation between economic crises and regime breakdown or associated processes, emphasizing the pivotal role of economic shocks in triggering political transformations.

3.3 Predictive baseline

3.4 Performance metrics

4 Results

4.1 Comparison with thematic models

4.2 Forecasts 2024-2027

4.3 Conclusion and extensions

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