

# Sample Selection Effects and the Likelihood of Coups

Zhu Qi  
University of Essex  
[qz21485@essex.ac.uk](mailto:qz21485@essex.ac.uk)

2024-04-17

## Abstract

A substantial body of research has examined coups, with much of it focusing on the factors that lead to coup attempts. However, consensus remains elusive regarding why coups are more prevalent in certain countries while less so in others. Previous scholarship exploring the determinants of coup attempts has often overlooked the crucial aspect of coup success. Given the severe consequences of a failed coup, coup plotters are unlikely to proceed unless they perceive a high chance of success. Thus, the expected outcome of a coup—whether successful or unsuccessful—is not merely incidental but serves as a pivotal determinant of coup attempts. The decision to stage a coup is a self-selected variable contingent upon the anticipated success rate of coups. This study employs a sample selection model (specifically, a two-stage probit model) to elucidate why coups are more common in some autocratic countries but rare in others. I contend that coup attempts are largely shaped by the likelihood of coup success, which, in turn, hinges on the power dynamics between coup perpetrators and incumbents. These power dynamics are influenced by the regime type and their distinct responses to internal and external shocks.

*Keywords:* Coup, Autocracy, Regime types, Sample selection

# 1 Introduction

Coups occur with varying frequency across different countries, with some experiencing them more frequently than others. According to the Global Instances of Coups (GIC)<sup>1</sup> dataset (J. M. Powell and Thyne 2011), Latin American countries such as Bolivia witnessed 23 coups between 1950 and 1984, while Argentina experienced 20 during a similar timeframe. However, Mexico’s authoritarian period from 1917 to 2000 saw no coups at all. In Africa, Sudan endured 17 coups between 1955 and 2023, whereas South Africa has not experienced any coup since 1950. Similar patterns are observed in the Middle East and South Asia. The question of why coups occur more frequently in certain regions, countries, and periods, while being less common in others, has captivated scholars for decades. Consequently, scholars have delved into extensive research on coups. Despite numerous efforts in past studies to shed light on these disparities, a definitive model or set of determinants for analyzing coups remains elusive. As highlighted by Gassebner, Gutmann, and Voigt (2016), although approximately one hundred potential determinants of coups have been suggested, the fundamental question remains unanswered.

However, despite extensive research by scholars, the impact of anticipated outcomes on coup initiation has not received sufficient attention. When analyzing the determinants of coups, it’s crucial not to overlook the most significant characteristic of coups themselves. As noted by J. M. Powell and Thyne (2011), coups are “illegal and overt attempts by the military or other elites within the state apparatus to unseat the sitting executive.”(P.252) Due to their illegality, the consequences of a failed coup could be severe, with perpetrators risking imprisonment, exile, or even death. In some instances, the repercussions extend to the families of the coup perpetrators.

Despite the significant risks associated with coups, as shown in Table 1 since 1950, there have still been as many as 491 coups worldwide. Furthermore, more importantly, half of these coups have been successful. At first glance, coups seem to be a high-success-rate, high-reward political venture and speculation. However, compared to over 12,000 country-years since 1950, the occurrence of 491 coups appears rather rare, accounting for less than 4%.

---

<sup>1</sup>[https://www.uky.edu/~clthyn2/coup\\_data/home.htm](https://www.uky.edu/~clthyn2/coup_data/home.htm), accessed on 2024-04-17

The low occurrence rate and high success rate indicate that the initiation of coups is highly selective. In other words, the likelihood of a coup occurring depends greatly on its potential success rate. Coup plotters carefully assess their chances before staging a coup. If they decide to proceed, it suggests that the conditions are relatively ripe, hence the fifty-fifty success rate. Plans with immature conditions and low chances of success are automatically filtered out. Fundamentally, launching a coup is not like participating in a general election, where failure in one election allows for another attempt in the next election. A coup is a high-stakes gamble where success brings substantial rewards, while failure may result in martyrdom. Failure, put differently, means permanent and absolute defeat. Furthermore, the outcomes of coups are typically decided within a matter of days, sometimes even mere hours. Unlike prolonged conflicts where victories or defeats may shift over time, the success of a coup is often sealed at its inception. Every detail must be meticulously planned and arranged beforehand.

Table 1: Top 10 countries with the most coup attempts

Country	Coup Attempted	Coup Succeeded	Success Rate
Bolivia	23	11	47.8%
Argentina	20	7	35.0%
Sudan	17	6	35.3%
Haiti	13	9	69.2%
Venezuela	13	0	0.0%
Iraq	12	4	33.3%
Syria	12	8	66.7%
Thailand	12	8	66.7%
Ecuador	11	5	45.5%
Burundi	11	5	45.5%
Guatemala	10	5	50.0%
Total	491	245	49.9%

*Source: GIC dataset*

Hence, the factors influencing the success rates of coups play a significant role in shaping coup attempts. This study employs a sample selection model to examine the factors affecting the success rates of coups and, consequently, the likelihood of coup attempts. I posit that the power dynamics among coup perpetrators, incumbents, and other ruling elites are pivotal in determining the success of coups. These dynamics are largely contingent on regime types, highlighting the pivotal role of regime types in shaping coup attempts.

This study offers two potential contributions to the existing literature: firstly, it highlights the significance of power dynamics within various regime types as critical factors influencing coup attempts; secondly, it demonstrates how sample selection models can enhance our understanding of coup attempts by taking into account the success rates of coups.

The subsequent section of this paper delves into previous research on coups. Following that, in Part 3, I present the research framework and propose hypotheses. Part 4 provides insights into the data and variables utilized in the study. The testing results are discussed in Part 5, followed by the conclusion in Part 6.

## **2 Theory**

When coup plotters weigh the decision to stage a coup, they naturally consider two crucial factors, which are also the primary concerns of coup scholars. One aspect is the disposition, namely, why they would risk their future to instigate a coup. The other aspect is the capability or opportunity, namely, whether they can garner enough support to succeed in their endeavour.

### **2.1 Basic framework**

A commonly cited framework for assessing the disposition and opportunity of coup attempts is formalized by Leon ([2013a](#)) to evaluate the anticipated benefits for coup plotters. This framework

can be outlined as follows:

$$\text{Expected Payoff of coups} = \sigma V_S + (1 - \sigma)(V_I - C) \quad (1)$$

Here,  $V_S$  represents the return of a successful coup,  $V_I$  denotes the normal value paid by the incumbent in the status quo,  $C$  signifies the cost of the failed coup, and  $\sigma$  represents the probability of coup success. By rearranging the equation, we can derive:

$$\sigma(V_S - V_I) > (1 - \sigma)C \quad (2)$$

Drawing from these equations, Aidt and Leon (2019) suggests that the decision to initiate a coup hinges on whether the expected benefits of a successful coup outweigh the potential costs of failure. Both the disposition to attempt a coup and the opportunity to stage a successful coup are encompassed within the equation. The disposition is captured in the gain from a successful coup, denoted as  $V_S - V_I$ . Meanwhile, the opportunity is represented by the probability of a successful coup, denoted as  $\sigma$ . Although this logical framework seems plausible, it immediately poses practical challenges in quantifying the values of  $V_S$  and  $C$ , which are not easily measurable in real-world terms. How can one accurately measure the cost of losing freedom, life, or even beloved family members if a coup fails? Similarly, how can the value of assuming leadership of a country be quantified if the coup succeeds? These are not commodities that can be exchanged in a market.

While  $V_S$  and  $C$  may be impossible to measure in precise terms, this does not render the equations useless. Firstly, the underlying logic of the equations remains robust and provides a valuable framework for understanding the decision-making process of coup plotters. Secondly, there is no need for precise measurements of  $V_S$  and  $C$ . It is sufficient to consider them as invaluable, with both potentially considered roughly equal. Additionally, coup plotters are driven by factors beyond mere economic gains or losses. As long as the coup succeeds, they win anyway. This suggests that in Equation 2, the values of  $V_S - V_I$  and  $C$  can be disregarded, and the focus can solely be on the

probability of the coup's success,  $\sigma$ .

## 2.2 Disposition

To simplify understanding, coups can be categorized into three types based on their motivations: those driven by personal ambitions, those purportedly for the benefit of the country, and those undertaken for self-preservation.

First and most, coup plotters are motivated by the allure of unrestrained power, revered status, and access to substantial financial resources. Wintrobe (2019) explores various forms of dictatorships, distinguishing between totalitarian leaders and tinpot leaders. Totalitarian leaders exert control over every aspect of their citizens' lives, relishing the power they wield. On the other hand, tinpot leaders are primarily motivated by personal consumption, indulging in luxuries such as living in opulent palaces, driving luxury cars like Mercedes, and adorning themselves with prestigious accessories like Rolex watches.

Secondly, at times, coups are justified by motives such as rescuing a country in crisis, upholding constitutional authority, or facilitating democratic transition. However, this rationale is often met with skepticism, as the first type of coup plotters often use similar excuses to justify their actions. Nonetheless, there are indeed cases that validate the purported objectives. For instance, in Niger in 2010, a coup ousted President Tandja, who sought to secure a third term in office contrary to constitutional limits. Tandja's attempt to extend his presidency led to the dissolution of the Constitutional Court when it opposed his proposal, prompting a referendum for a new constitution to enable a third term. This triggered the coup to protect the constitution (Ginsburg and Elkins 2019).

Thirdly, in certain instances, staging a coup serves as a final resort for self-preservation, aimed at evading political persecution by adversaries. Coup perpetrators may not harbor further ambitions and may be content with the status quo. However, their mere existence could be perceived as a threat by the incumbent leader, prompting the need for their removal. Consequently, the coup is triggered rather than initiated by the coup perpetrators themselves. An illustrative example is Idi Amin, who, as the army commander-in-chief of Uganda in 1971, staged a coup against President

Obote, who was attempting to undermine Amin ([Sudduth 2017](#)).

Theoretically, these three types of coup plotters can emerge from any type of regimes. While they may be more prevalent in autocracies, ambitious individuals can also exist within democracies. Moreover, unstable societies, economic downturns, and democratic backsliding can occur even in democracies. Although political persecutions may be rare in stable democracies, they are not uncommon in newly established or poorly governed ones. However, despite these factors, the occurrence of coups remains relatively low, accounting for only 4% of country-years since 1950. This is primarily because the disposition to stage coups is heavily contingent upon the opportunity to do so.

## 2.3 Opportunity

While there may be numerous ambitious political figures aspiring to seize supreme power for various reasons as mentioned above, only a select few have the opportunity to orchestrate a successful coup. Among them, those who control the military forces wield the greatest potential as coup plotters. This is why military coups are often the focal point of discussion in political science.

There are three dimensions when we analyse coup outcomes. The first dimension is straightforward: why some coups succeed while others fail ([Quinlivan 1999](#); [Kebschull 1994](#)). The second dimension focuses on the potential influences: what happens after failed coups and successful coups. In particular, whether it helps the shifts towards democracy following successful coups. This debate is exemplified by the arguments between Michael Miller ([Miller 2016](#)) and Derpanopoulos, Frantz & Gedde ([Derpanopoulos et al. 2016, 2017](#)). However, the third dimension, which explores how the expected success of coups influences coup attempts, remains underexplored.

Among the limited discussions on the influence of coup success on coup attempts, J. Powell ([2012](#)) utilizes a selection model with global data spanning 1961 to 2000. Powell's findings suggest that coup-proofing strategies, such as balancing and providing resources to the military, reduce the likelihood of coups but increase their chances of success.

However, few of the aforementioned studies have explored the interdependence between coup

attempts and coup success. In other words, as demonstrated in Equation 1 and Equation 2, they do not consider the likelihood of coup success as a primary determinant of coup attempts.

If the likelihood of coup success is predetermined, what factors influence or potentially determine the success rates of coups? Much attention is understandably given to military strength, as it is believed that the control of military forces often determines the success of coups. Consequently, coup-proofing strategies are designed to either decrease the inclination of military forces to stage coups or to erect barriers that impede their success. For instance, studies by Leon (2013b) suggest that coups are more probable in nations where military spending as a percentage of GDP is low. J. Powell et al. (2018) also argue that increased military expenditures may decrease the propensity for coups among military factions. However, as J. Powell (2012) posits, while measures aimed at pacifying the military may diminish the likelihood of a coup being attempted, greater military resources may simultaneously enhance the probability of a coup's success.

In addition to military factors, research delves into other determinants as well. For instance, Bell (2016) contends that democracies are less susceptible to coups, yet coup attempts against democracies are more likely to succeed.

### **3 Research Framework and Hypotheses**

### **4 Data and Variables**

### **5 Results and Discussion**

### **6 Conclusion**



## 7 References

mtcars

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
Merc 230	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4
Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	4
Fiat 128	32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	1
Honda Civic	30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	2
Toyota Corolla	33.9	4	71.1	65	4.22	1.835	19.90	1	1	4	1
Toyota Corona	21.5	4	120.1	97	3.70	2.465	20.01	1	0	3	1
Dodge Challenger	15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	2
AMC Javelin	15.2	8	304.0	150	3.15	3.435	17.30	0	0	3	2

Camaro Z28	13.3	8	350.0	245	3.73	3.840	15.41	0	0	3	4
Pontiac Firebird	19.2	8	400.0	175	3.08	3.845	17.05	0	0	3	2
Fiat X1-9	27.3	4	79.0	66	4.08	1.935	18.90	1	1	4	1
Porsche 914-2	26.0	4	120.3	91	4.43	2.140	16.70	0	1	5	2
Lotus Europa	30.4	4	95.1	113	3.77	1.513	16.90	1	1	5	2
Ford Pantera L	15.8	8	351.0	264	4.22	3.170	14.50	0	1	5	4
Ferrari Dino	19.7	6	145.0	175	3.62	2.770	15.50	0	1	5	6
Maserati Bora	15.0	8	301.0	335	3.54	3.570	14.60	0	1	5	8
Volvo 142E	21.4	4	121.0	109	4.11	2.780	18.60	1	1	4	2

Aidt, Toke, and Gabriel Leon. 2019. “The Coup.” Edited by Roger D. Congleton, Bernard Grofman, and Stefan Voigt, February. <https://doi.org/10.1093/oxfordhb/9780190469771.013.15>.

Bell, Curtis. 2016. “Coup d’État and Democracy.” *Comparative Political Studies* 49 (9): 1167–1200. <https://doi.org/10.1177/0010414015621081>.

Derpanopoulos, George, Erica Frantz, Barbara Geddes, and Joseph Wright. 2016. “Are Coups Good for Democracy?” *Research & Politics* 3 (1): 205316801663083. <https://doi.org/10.1177/2053168016630837>.

———. 2017. “Are Coups Good for Democracy? A Response to Miller (2016).” *Research & Politics* 4 (2): 205316801770735. <https://doi.org/10.1177/2053168017707355>.

Gassebner, Martin, Jerg Gutmann, and Stefan Voigt. 2016. “When to Expect a Coup D’État? An Extreme Bound Analysis of Coup Determinants.” *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2851758>.

Ginsburg, Tom, and Zachary Elkins. 2019. “One Size Does Not Fit All.” In, 37–52. Oxford University Press. <https://doi.org/10.1093/oso/9780198837404.003.0003>.

Kebschull, Harvey G. 1994. “Operation ”Just Missed”: Lessons From Failed Coup Attempts.” *Armed Forces & Society* 20 (4): 565–79. <https://doi.org/10.1177/0095327x9402000405>.

Leon, Gabriel. 2013a. “Soldiers or Politicians? Institutions, Conflict, and the Military’s Role in Politics.” *Oxford Economic Papers* 66 (2): 533–56. <https://doi.org/10.1093/oep/gpt024>.

- . 2013b. “Loyalty for Sale? Military Spending and Coups d’état.” *Public Choice* 159 (3-4): 363–83. <https://doi.org/10.1007/s11127-013-0124-4>.
- Miller, Michael K. 2016. “Reanalysis: Are Coups Good for Democracy?” *Research & Politics* 3 (4): 205316801668190. <https://doi.org/10.1177/2053168016681908>.
- Powell, Jonathan. 2012. “Determinants of the Attempting and Outcome of Coups d’état.” *Journal of Conflict Resolution* 56 (6): 1017–40. <https://doi.org/10.1177/0022002712445732>.
- Powell, Jonathan M, and Clayton L Thyne. 2011. “Global Instances of Coups from 1950 to 2010: A New Dataset.” *Journal of Peace Research* 48 (2): 249–59. <https://doi.org/10.1177/0022343310397436>.
- Powell, Jonathan, Christopher Faulkner, William Dean, and Kyle Romano. 2018. “Give Them Toys? Military Allocations and Regime Stability in Transitional Democracies.” *Democratization* 25 (7): 1153–72. <https://doi.org/10.1080/13510347.2018.1450389>.
- Quinlivan, James. 1999. *Coup-Proofing: Its Practice and Consequences in the Middle East*. MIT Press. <https://doi.org/10.7249/rp844>.
- Sudduth, Jun Koga. 2017. “Strategic Logic of Elite Purges in Dictatorships.” *Comparative Political Studies* 50 (13): 1768–1801. <https://doi.org/10.1177/0010414016688004>.
- Wintrobe, Ronald. 2019. “Are There Types of Dictatorship?” Edited by Roger D. Congleton, Bernard Grofman, and Stefan Voigt, February. <https://doi.org/10.1093/oxfordhb/9780190469771.013.13>.