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Abstract

We develop a theory of election-day information asymmetries in competitive authoritarian settings, and use it to analyze Venezuela’s 2024 presidential election. We argue that when autocratic regimes observe election results before the opposition, defeated incumbents may exploit the resulting window of uncertainty to “move to a Plan B”, delaying publication, manufacturing narratives, and falsifying the results. The model shows that asymmetric information increases the expected payoff from post-election fraud by inducing opposition timidity, and can therefore make holding risky elections more attractive *ex ante*. Empirically, we reconstruct election-night information streams using machine-printed timestamps and opposition scan times from precinct-level tally sheets. We show that Maduro’s defeat was statistically irreversible from his regime’s perspective before 7pm, and arithmetically so by 8pm. However, the opposition lacked comparable certainty on election night. Based on these findings, our model seamlessly explains both parties’ decisions and statements after polls closed.

Keywords: Competitive authoritarianism; Election fraud; Information asymmetries; Election-night forecasting; Venezuela.

Introduction

Election results are consequential before they become official. As returns accumulate during election day, candidates, parties, and incumbents update their beliefs and make decisions based on whether current tallies remain reversible. In democratic settings, this process often culminates in challenges and litigation, or in concessions and peaceful transfers of power. In competitive authoritarian settings, however, the same flow of information can trigger a different set of incumbent responses: delaying publication, manufacturing uncertainty, suspending audits, repressing opponents, or falsifying counts ([Schedler, 2013](#); [Harvey and Mukherjee, 2020](#); [United Nations Panel of Experts, 2024](#); [The Carter Center, 2024](#)). The opposition will be able to react hastily and decisively depending on whether the information available to them either mirrors or lags that of the incumbent. The strategic problem is not only whether to manipulate an election or not, but at what point during election day the incumbent learns about the election result, and the degree of information asymmetry between the incumbent and the opposition at that time.

This paper starts by proposing a theoretical framework, framing our contributions within the literature, and formalizing how incumbent decision-making during election day can be influenced by information asymmetries vis-a-vis the opposition in competitive authoritarian environments. In our model, the incumbent must first decide whether to allow or not allow for an election. In the latter scenario, the incumbent would remain with its legitimacy contested. If they decide to allow for the election to occur, nature chooses whether the incumbent wins and regains legitimacy, or whether they lose the election. If the incumbent loses, they will have a chance to decide whether to concede or to pursue fraud as soon as they learn about the irreversibility of the result. If pursuing fraud, nature chooses whether fraud is successful and the incumbent remains in office with contested legitimacy, or whether the fraud is unsuccessful and the incumbent is “imprisoned”. Importantly, the probability of fraud success will be informed by the opposition’s reaction, which will be timid if they remain uncertain about their victory, or bold if they have access to the same information as the

incumbent. The key conclusion of the model is that because information asymmetries -and the corresponding opposition timidity- enable the chances of fraud success, they improve the incumbents' expected payoff of losing the election. Since the incumbent perceives a positive probability of winning the election and legitimizing their regime, knowing that they will enjoy information asymmetries in the event of losing can nudge risk-taking, allowing for an election to occur in the first place.

We leverage our model to study this problem in the context of the 2024 Venezuelan presidential elections. On July 28 2024, Nicolás Maduro competed against Edmundo González Urrutia, the candidate supported by the opposition after María Corina Machado, winner of the opposition primary, was barred from running. The election took place after a negotiated opening linked to the prospect of sanctions relief, but under severe institutional asymmetry: the government retained control over the electoral authority (CNE), which restricted opposition candidates, and governed the timing and certification of official results. The opposition, by contrast, entered the election with limited institutional power but with an unusually extensive monitoring operation, with local volunteers organized around the collection and scanning of printed voting tallies. The aftermath of the election has largely been studied as a question of fraud detection and verification. CNE announced aggregate results declaring Maduro the winner, but did not publish precinct-level returns necessary to verify those results. The opposition, by contrast, released a large archive with 85% of scanned *actas*, or precinct-level tally sheets, which independent and academic analyses have certified as valid ([Kronick, 2024](#); [Corrales and Kronick, 2025](#); [United Nations Panel of Experts, 2024](#); [The Carter Center, 2024](#)).

Building on these analyses and on their conclusion of fraud, we move beyond simply statistical fraud detection and evaluate the information available to -and the decisions and statements made by- the government and the opposition at different times after the closing of polling stations at 6pm on July 28, 2024. The regime and the opposition did not observe the same information at the same time: The official transmission channel gave the regime-

controlled CNE access to precinct-level results immediately after voting machines printed their respective *actas*. The opposition’s parallel monitoring channel depended on witnesses obtaining, transporting, scanning, and uploading those same printed *actas*. As a result, the regime’s information stream ran far ahead of the opposition’s. This asymmetry created a crucial interval in which the regime was certain about its election loss while the opposition remained uncertain and timid, in turn, creating an opportunity for the government to “switch to a Plan B” (Kurmanaev, 2024), organizing regime insiders around the release of a fraudulent official result before the opposition could react decisively.

We document this information asymmetry, building a “live” reconstruction of the vote-counting process from the perspective of the government and of the opposition. The key innovation is the use of two timestamps embedded in or associated with each *acta*. The first is the voting machine printed timestamp, which we use to approximate when the result became available to the regime through the official transmission channel. The second is the timestamp of the opposition’s scanning of each *acta*, which we use to approximate when the result became available to the opposition through its parallel monitoring system. We reconstruct the two election-night information streams, and replay the election at 5-minute intervals after the polls closed. At each interval, we estimate the probability of an opposition electoral victory given the available information from the perspective of both parties. The model begins with precinct-level priors based on earlier presidential elections, which are progressively updated based on the accruing information from neighboring precincts. Based on updated priors, we simulate unreported mesas under a spatially correlated uncertainty structure. The output is a sequence of simulations over the final opposition vote share, and a corresponding probability of an opposition victory, estimated as the share of simulations in which the opposition obtained more than 50% of votes.

We complement this Bayesian “statistical” analysis with an “arithmetic” assessment of the chances of an opposition victory, based on the share of unreported votes that Maduro would need to obtain in order to reverse the reported opposition advantage at different points of

the day. Results highlight the stark information asymmetry between both parties. From the regime’s perspective, winning the election became statistically impossible before 7pm, with less than one hour of official reporting.¹ By 8pm, Maduro became “arithmetically” unable to overturn the election result, as the complete set of unreported votes was already smaller than Edmundo Gonzalez’s officially reported advantage. The opposition did not have access to this official tally, but to the *actas* collected and scanned by its volunteers with a substantial lag. From a statistical perspective, the opposition’s information pointed to an irreversible victory by 9pm. However, to the best of our knowledge, the opposition’s statistical “quick count” strategies, while planned with enough redundancies for prediction certainty, could not deliver reliable insights before midnight on July 28.² Arithmetically, because the opposition had only collected about 25% of all *actas* by midnight on July 28th, Maduro could have still overturned Gonzalez’s advantage by gaining about 60% of votes in the *actas* that the opposition was still to collect.

From the perspective of the model, these information asymmetries between the government and the opposition during election day map cleanly to the events and statements made by both parties after polling stations closed. Starting at 7:30pm (soon after statistical irreversibility from the regime’s perspective according to our analyses), data transmission to CNE was interrupted for about two hours, while at the same time CNE prevented opposition witnesses from entering its voting totalization rooms in Caracas. By 9pm, CNE started to position a cyberattack narrative to explain transmission delays, while regime and military spokesmen started making statements hinting at a Maduro victory. At midnight, instead of challenging events, an opposition’s spokesperson timidly recognized that they had only collected about 30% of *actas*. The CNE’s president officially announced Maduro’s victory shortly after.

¹Polls are mandated to close at 6pm unless there are still voters in line.

²Consider the “Altavista” quick count, the most prominent of the opposition’s statistical efforts ([AltaVista, 2024](#)). Altavista built its highly accurate prediction of the election results with data still being scanned in the afternoon of July 30th. By Midnight on July 28th, they had scanned 352 *actas*, about 35% of the total used for their prediction. Analysis of Altavista’s website metadata indicates that results were first released to the public at 5:30pm on July 30th. This evidence is consistent with the view that the opposition lacked statistical certainty of its victory by midnight on July 28th.

The model proposes an answer to the question of why would Maduro allow for an election that most polls suggested he was likely to lose. While optimism bias, trust in the regime’s clientelistic mobilization apparatus and negotiated sanction relief improved the perceived chances and outlook of a Maduro victory, knowing that control over the electoral authority would allow for the information asymmetries necessary to enable a switch to a “Plan B” in the event of an electoral loss improved the electoral proposition.

This paper contributes to the literature on elections under competitive authoritarian or autocratic regimes in multiple ways. Work on competitive authoritarianism and authoritarian elections explains why regimes hold elections and how they manipulate the rules of competition (Schedler, 2013; Magaloni, 2010; Little, 2012). Formal models of information and protest show how public signals and coordination shape authoritarian stability (Edmond, 2013). Research on election forensics, vote verification, and monitoring studies how fraud can be detected or deterred (Hyde, 2007; Cantú, 2019; Rundlett and Svolik, 2016). Yet these literatures rarely model the election count itself as a dynamic information environment in which competing actors receive unequal streams of information and update their strategies in real time. We further complete that gap by both modeling a theoretical and empirical approach to “live” updating during election nights. This paper identifies that missing mechanism: the timing and exclusivity of information arrival can alter the incumbent’s strategic response to impending defeat. This paper shifts the study of authoritarian election fraud from detection to the timing of decision-making. We formalize a mechanism in which asymmetric election-night information induces opposition timidity, increasing the regime’s expected payoff from fraud after a loss, and incentivizing autocratic electoral risk-taking. Empirically, we leverage Bayesian inference methods on unique data about the timing of precinct-level information gathering from the perspective of the government and the opposition to document information asymmetries at precise, narrow windows. While existing work has established that the official 2024 Venezuelan results were fraudulent, we ask when the regime likely learned that an opposition victory was irreversible, and what the opposition knew about the results at that time. Once we

catalog the existence of an asymmetric information flow, this allows us to move beyond fraud detection into fraud participation. We interpret our findings from the perspective of the model to explain the regime’s subsequent decisions to interrupt electoral data transmission, withhold aggregate information from the opposition, make public statements preempting a Maduro victory, and release fraudulent election results immediately after the opposition publicly confirmed the information asymmetry.

The rest of the paper proceeds as follows. Section 1 introduces our theoretical framework, discussing the literature on authoritarian elections, electoral manipulation, vote verification, and election-night information; and formalizing how asymmetries on election day affect influence decision-making by both the incumbent and the opposition. Section 2 provides the political and institutional context of the 2024 Venezuelan presidential election. Section 3 describes the *actas* data, the vote-counting reconstruction process from the government’s and the opposition’s perspective, and our Bayesian prediction methodology. Section 4 presents the statistical and arithmetic replay of election-night results for both parties. Section 5 leverages our model to contextualize our quantitative evidence with the relevant events and statements after polls closed on July 28th, 2024. Section 6 concludes.

1 Authoritarian elections, information asymmetries, and strategic fraud

Authoritarian elections are not merely symbolic exercises. Even when incumbents control electoral authorities, courts, media access, and coercive institutions, elections can generate information about regime strength, opposition coordination, elite loyalty, and the distribution of mass support. A large literature on competitive authoritarianism and electoral authoritarianism emphasizes this dual character of elections: they are instruments of regime management, co-opting, information gathering, and elite coordination, but they can also expose incumbents to uncertainty and risk (Schedler, 2013; Magaloni, 2010; Little, 2012; Gandhi

and Lust-Okar, 2009; Levitsky and Way, 2010; Simpser, 2013). Votes do not serve as only signals of information, but the distribution of information is also important in the autocratic context. Elections help autocrats signal dominance, monitor supporters, identify opposition strongholds, and distribute patronage; yet because they aggregate political preferences, they may also reveal regime weakness. The informational function of elections is therefore central to understanding both why authoritarian regimes hold them and why electoral moments can become dangerous.

Existing work has paid particular attention to the ways in which authoritarian incumbents manipulate elections, before resorting to election-day fraud. Regimes may restrict parties, ban candidates, intimidate voters, manipulate media access, alter electoral rules, or rely on clientelism and coercive networks before election day; when these tools are insufficient, they may turn to administrative fraud, ballot-box manipulation, aggregation fraud, or the strategic withholding of results (Lehoucq, 2003; Simpser, 2013; Ichino and Schündeln, 2012; Harvey and Mukherjee, 2020). When those strategies are insufficient, they may resort to more direct manipulation of turnout, vote totals, ballot box stuffing, aggregation procedures, or result publication. A related literature on election monitoring, vote verification, and election forensics studies how domestic observers, international monitors, parallel vote tabulations, polling-station records, and statistical tests can expose or deter fraud (Hyde, 2007; Cantú, 2019; Rundlett and Svolik, 2016). That literature treats monitoring and verification as mechanisms that transform privately observed manipulation into public information; our contribution is to study the timing of that transformation during election night.

This paper builds on that literature, shifting the focus from fraud detection to the timing of strategic decision-making. Verification studies ask whether an announced result is credible given the available evidence. We ask a prior and complementary question: when could the relevant actors know that the result became irreversible? This distinction matters because authoritarian incumbents do not decide whether to manipulate in an informational vacuum,

and final decisions may be taken only after the result becomes certain to them.³ They observe partial returns, learn about the trajectory of the count, and update their beliefs about whether ordinary manipulation, delay, or narrative control will suffice. Once an incumbent learns that defeat is likely, the strategic choice set changes, as the relevant decision becomes whether to concede, delay, suppress information, manufacture uncertainty, cancel verification procedures, or falsify the result outright.

As these time-sensitive decisions are taken in a strategic, coordination-intensive environment vis-a-vis the opposition and the heads of relevant institutions, the informational structure during election night becomes central. Existing theories of authoritarian politics often emphasize public signals: elections reveal regime strength to citizens, elites, opposition actors, and international audiences; information and protest cascades and elite defections depend in part on what actors believe others know (Kuran, 1989; Edmond, 2013). Yet election-night information need not be public or symmetrically distributed. Incumbents, electoral authorities, parties, observers, and citizens may receive information at different speeds. Official transmission systems, party witness networks, parallel tabulations, and media reporters can access distinct information streams. The count itself is therefore a dynamic information environment in which actors update at different times and with different degrees of certainty.

This distinction connects the study of authoritarian elections to discussions about the concession or contestation of electoral results, and election-night forecasting. In democratic settings, the accumulation of returns structures concession, recount demands, litigation, and public acceptance of defeat. Candidates may wait until the outcome is statistically difficult to reverse before conceding, and they may contest results before or after irreversibility on procedural grounds, but their strategic choice is usually made under a shared information environment regarding the progressive tallying of election results. However, in competitive

³Many historical instances of elections under competitive authoritarian or autocratic regimes follow this pattern, either by releasing fraudulent results (Philippines 1986, Serbia 2000, Georgia 2003, Ukraine 2004, Zimbabwe 2008, The Gambia 2016, Belarus 2020) or by not recognizing results or annulling the event (Myanmar 1990, Algeria 1991, Nigeria 1993, Côte d'Ivoire 2010, The Gambia 2016, Turkey 2019).

authoritarian regimes, the same informational threshold can produce a different response. Once an incumbent learns that defeat is likely, they may leverage information asymmetries and control over electoral institutions to delay publication of disaggregated returns, discredit opposition evidence, repress mobilization, and announce fraudulent results.

The gap, then, is not that the existing literature ignores information. Rather, it typically treats electoral information either as a public signal, an ex post object of verification, or a background condition for post-election contestation. They less often model the count itself as a micro-temporal process in which competing actors receive unequal streams of information and update their strategies in real time. The 2024 Venezuelan presidential election provides an unusually clear setting in which to study this process. The opposition’s collection of *actas* created a parallel record of mesa-level results, while the timestamps associated with printed and scanned *actas* allow us to reconstruct when different actors plausibly gained access to those results. This makes it possible to move beyond a static comparison between official and opposition totals and instead analyze the temporal evolution of information access under authoritarian conditions.

The central claim of the paper is that asymmetric real-time information can shape authoritarian responses to electoral defeat on election night. Who knows the result, when they know it, and how quickly they can document it are not merely technical details of vote counting; they are central to the informational structure that can either enable or defuse election fraud.

1.1 A model of election-night information asymmetry

This model develops a simple game theoretical explanation of election-night decision making in an authoritarian context. The Regime first decides whether to allow an election. If the election occurs, Nature determines whether the Regime wins or loses legitimately. When the Regime loses, it may concede or attempt fraud. The Opposition can respond boldly or timidly. Boldness lowers the probability that fraud succeeds, but it exposes the Opposition

to repression if the Regime has actually won or if fraud succeeds. The core result is that information asymmetry changes both the Regime and Opposition incentives.

Under symmetric information, the Opposition knows whether a victory claim is legitimate and therefore acts boldly against fraud. Under asymmetric information, the Opposition cannot immediately distinguish a legitimate Regime victory from a fraudulent victory claim, making boldness risky and inducing timidity. Knowing of information asymmetries and anticipating this timid response, the Regime faces a higher expected payoff from fraud and therefore a higher expected payoff from allowing the election in the first place. In turn, the Regime can still allow an election to take place even if they expect to be defeated at the polls, as information asymmetries enable them to engage in fraud before the opposition has a chance to contest.

1.2 Players

There are two players and nature.

- The **Regime**, denoted R , is the authoritarian incumbent.
- The **Opposition**, denoted O , is the challenger.
- **Nature**, denoted N , determines the true electoral outcome.

1.3 Timing

The game proceeds as follows.

1. The Regime chooses whether to allow the election:

$$a_0 \in \{A, S\},$$

where A denotes allowing the election and S denotes not having elections. If $a_0 = S$, the game ends and the status quo remains.

2. If $a_0 = A$, Nature draws the true result of the election.

$$\omega \in \{W, L\},$$

where W denotes a legitimate Regime win and L denotes a legitimate Regime loss. Let

$$\Pr(\omega = W) = \theta, \quad \Pr(\omega = L) = 1 - \theta, \quad \theta \in (0, 1).$$

3. If $\omega = W$, the Regime claims victory. The Opposition chooses whether to act boldly or timidly:

$$a_O \in \{B, T\}.$$

Boldness after a legitimate Regime victory produces repression against the Opposition. Timidity avoids that cost.

4. If $\omega = L$, the Regime observes the loss and chooses whether to concede or attempt fraud:

$$a_R \in \{C, F\},$$

where C denotes concession and F denotes fraud: falsely claiming victory, disrupting the flow of information, and repressing dissent.

5. If the Regime concedes, the game ends. If the Regime attempts fraud, the Opposition chooses B or T . Nature then determines whether fraud succeeds or is defeated. Boldness lowers the probability of successful fraud; timidity raises it.

1.4 Information regimes

The same material game can be played under two information regimes.

Definition 1 (Symmetric information). Under $\bar{I}$, both the Regime and the Opposition observe the true outcome ω once Nature draws it. Therefore, if the Regime claims victory,

the Opposition knows whether that claim follows a legitimate Regime win or a Regime loss followed by fraud.

Definition 2 (Asymmetric information). Under $\underline{I}$, the Regime observes ω before the Opposition can verify it. If the Regime does not concede and instead claims victory, the Opposition cannot immediately distinguish between a legitimate Regime win and a Regime loss followed by fraud. The Opposition's belief that an official Regime victory claim is legitimate is θ . The belief θ can be interpreted as the Opposition's election-night assessment that a Regime victory claim is legitimate.

1.5 Payoffs

The key payoffs are:

- $V_R > 0$: Regime payoff from a legitimate electoral victory.
- $\tilde{u}_R > 0$: Regime payoff from successfully stealing the election.
- $\bar{u}_R > 0$: Regime payoff from non-electoral incumbency, obtained if it stays out of the election.
- $-P_R < 0$: Regime payoff if fraud is defeated.

The key Opposition payoffs are:

- $V_O > 0$: Opposition payoff from Regime concession or defeated fraud.
- 0 : Opposition payoff from acting timidly when the Regime wins or when fraud succeeds.
- $-J < 0$: Opposition payoff from repression or jail.

We assume the following ordering for Regime payoffs:

$$V_R > \tilde{u}_R > \bar{u}_R > 0 > -P_R. \tag{1}$$

The inequality $V_R > \tilde{u}_R$ captures the legitimacy penalty associated with successful fraud: stealing the election is valuable, but it is not as valuable as winning legitimately. The inequality $\tilde{u}_R > \bar{u}_R$ captures the idea that a successfully stolen election may still provide more procedural cover than openly avoiding electoral competition.

Let

$$0 \leq \underline{\phi} < \bar{\phi} \leq 1. \quad (2)$$

Here $\underline{\phi}$ is the probability that fraud succeeds when the Opposition acts boldly, while $\bar{\phi}$ is the probability that fraud succeeds when the Opposition acts timidly. Thus boldness reduces the probability of successful fraud.

1.6 Extensive Form

Figure 1 presents the extensive form. The dashed blue information set is included only under asymmetric information $\underline{I}$. It connects the Opposition's decision node after a legitimate Regime victory with the Opposition's decision node after a Regime loss followed by fraud. Under symmetric information $\bar{I}$, this dashed information set is removed: the Opposition knows which node it occupies.

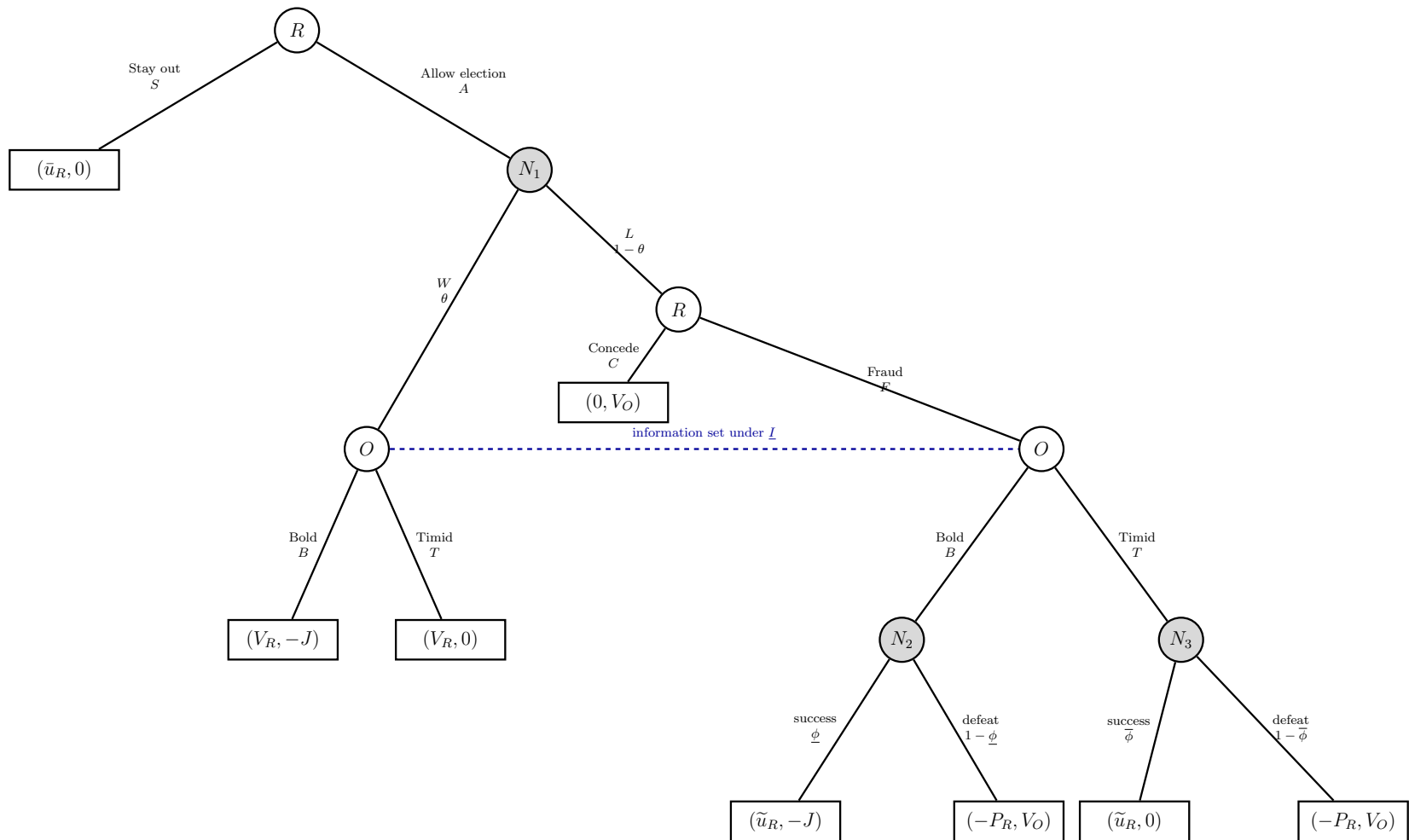


Figure 1: Extensive-form game. The first payoff in each terminal node belongs to the Regime and the second to the Opposition. The dashed information set appears only under asymmetric information. It captures the Opposition's inability to immediately distinguish a legitimate Regime victory from a fraudulent victory claim. Under symmetric information, the dashed information set is removed.

The results of this model imply three insights:

Information asymmetry affects Opposition behavior. Under symmetric information, the Opposition can condition its behavior on the true state of the world. It is timid when the Regime truly wins and bold when the Regime loses and attempts fraud. Under asymmetric information, the Opposition cannot condition in this way. The same public event – an official Regime victory claim – may correspond either to a legitimate Regime victory or to a fraudulent attempt to overturn a loss. This ambiguity makes boldness costly and can induce timidity.

Second, Opposition timidity raises the value of fraud. Boldness lowers the probability of successful fraud from $\bar{\phi}$ to $\underline{\phi}$. Therefore, when information symmetry induces boldness, fraud is less attractive for the Regime. When information asymmetry induces timidity, fraud becomes more attractive. The difference is

$$B_R^T - B_R^B = (\bar{\phi} - \underline{\phi})(\tilde{u}_R + P_R) > 0.$$

The Regime’s informational advantage matters because it changes the response it expects from the Opposition.

Third, information asymmetry can explain election entry. The Regime decides whether to allow the election before knowing the realized result. A legitimate victory yields V_R , but a legitimate loss need not lead to concession if the Regime expects a timid Opposition and a high probability of successful fraud. Thus information asymmetry makes the election less risky. The Regime can allow the election in hopes of receiving the high payoff of a legitimate victory, while retaining a more valuable fallback option if it loses. A full set of assumptions, propositions and proofs of the model are provided in Subsection [A.1](#) of the appendix.

1.7 Mapping to the election-night setting

In the empirical setting motivating the model, the Regime observes official tabulations quickly through the regime-controlled electoral authority. The Opposition, by contrast, must wait for local witnesses to receive paper tally sheets, scan them, upload them, and have them aggregated by the opposition command. During this window, the Opposition may suspect fraud but lacks enough verified tally sheets to prove it publicly. The Regime can exploit this window by claiming victory before the Opposition has crossed the evidentiary threshold needed to make a credible counter-claim.

The model’s central point is that this delay changes not only what the players know, but how they behave. Because the Opposition cannot yet prove that the Regime lost, bold action risks repression if the official victory claim turns out to be accepted as legitimate. This risk can make the Opposition timid at the very moment when boldness would be most effective. Anticipating that response, the Regime’s expected payoff from a fraudulent Plan B increases.

2 Venezuela’s 2024 elections: Institutional setting and the *actas* data

2.1 The authoritarian electoral context

The 2024 Venezuelan presidential election took place in a political environment shaped by a decade of decisive democratic erosion. Although Venezuela continued to hold elections under the governments of Hugo Chávez and Nicolás Maduro, electoral conditions deteriorated sharply after the opposition’s victory in the 2015 parliamentary elections. The Maduro government responded to that defeat, which granted the opposition a super-majority control over the country’s National Assembly, by neutralizing its legislative prerogatives through loyalist courts and by brutally repressing protests and other forms of dissent. Regarding elections, Maduro increased the use of administrative and judicial mechanisms to exclude

opposition leaders from competition. By the time of the 2018 presidential election, several major opposition parties and candidates had been disqualified, jailed, exiled, or otherwise prevented from competing, and the main opposition coalition boycotted the contest on the grounds that minimum electoral conditions were absent.

The 2018 election demonstrated a strategic dilemma for the opposition. Participation under unequal rules risked legitimating an authoritarian ruler, while abstention without successful regime change further reduced the opposition’s institutional presence. In the years that followed, opposition politics oscillated between strategies of international pressure, abstention, and attempts to organize domestic mobilization; and engaging in negotiations for basic electoral conditions. The internationally recognized interim government headed by Juan Guaidó initially appeared to create a focal point for opposition dissent, but by early 2023, its interim government was dissolved, leaving an organizationally weakened opposition.

At that time, the Maduro regime had reasons to seek a controlled electoral opening. First, a presidential election was constitutionally required for 2024. Second, an electoral process offered the regime a pathway to partial international normalization and sanctions relief. Third, the government calculated that it could manage the election by controlling candidate eligibility, the clientelistic distribution of subsidized food boxes, media access, and the decisions of CNE - the country’s electoral authority. The possibility of holding an election was part of the regime’s potential authoritarian strategy: allow a formally competitive process while retaining institutional control over the conditions under which competition occurred (Corrales and Kronick, 2025; The Carter Center, 2024).

2.2 The Barbados Accords and the negotiated electoral opening

The immediate institutional opening that made the 2024 presidential election possible emerged from negotiations between representatives of the Maduro government and the opposition’s *Plataforma Unitaria Democrática*. These negotiations culminated in the October 2023 Barbados Agreement. The agreement provided an electoral roadmap for a presidential

election in the second half of 2024 and included commitments related to political rights, candidate selection, electoral observation, media access, voter registration, and recognition of results proclaimed by the electoral authority ([International Crisis Group, 2023](#)).

The agreement was also linked to international incentives. Following the signing of the Barbados accord, the United States issued temporary sanctions relief, including General License 44, which authorized certain transactions involving Venezuela’s oil and gas sector through April 2024. U.S. officials stated that renewal of this relief would depend on the Maduro government’s compliance with commitments related to the electoral roadmap, candidate participation, and political prisoners ([U.S. Department of the Treasury, Office of Foreign Assets Control, 2023](#)). In this sense, the election was embedded in a bargaining environment: the regime sought international concessions and legitimacy, while the opposition and external actors sought minimum electoral guarantees.

The Barbados Agreement did not, however, produce a fully competitive electoral environment. Its most consequential ambiguity concerned candidate eligibility. The agreement recognized the right of political actors to select their candidates according to internal mechanisms, but it did not immediately resolve the government’s use of administrative disqualifications to prevent leading opposition figures from holding office. This ambiguity became central after the opposition primary.

2.3 The opposition primary and the emergence of María Corina Machado

In October 2023, the opposition organized a primary election to select a unity candidate for the 2024 presidential race. María Corina Machado, leader of *Vente Venezuela*, won by an overwhelming margin, receiving more than 90 percent of the vote according to opposition primary authorities and contemporaneous reporting ([Armas and Sequera, 2023](#); [Garcia-Cano, 2023](#)). Her victory was politically significant for three reasons.

First, it resolved the opposition’s coordination problem. Machado’s victory gave the

anti-Maduro electorate a clear focal point after years of fragmentation. Second, the primary demonstrated substantial mobilization capacity outside the regime-controlled electoral apparatus. Despite limited resources and pressure from state institutions, the opposition organized a nationwide consultation and produced a result that was difficult to dismiss as merely elite coordination. Third, Machado’s nomination sharpened the conflict between the Barbados framework and the regime’s control over candidate eligibility. Machado had already been subject to an administrative ban from holding public office, and in January 2024 Venezuela’s Supreme Tribunal of Justice confirmed the disqualification, preventing her from registering as a presidential candidate ([Kurmanaeu, 2024](#)).

Machado’s disqualification altered the strategic terrain. The opposition had achieved unity behind a candidate but was denied the ability to place that candidate on the ballot. Rather than withdrawing from the process, Machado and the *Plataforma Unitaria* attempted to preserve unity by designating a substitute who could embody the primary mandate while circumventing the personal disqualification imposed on Machado.

2.4 From Corina Yoris to Edmundo González

Machado first endorsed Corina Yoris, an academic and philosopher, as the opposition’s substitute candidate. Yoris was politically acceptable to Machado’s movement and had not been subject to a public administrative ban. However, opposition representatives reported being unable to access the electoral authority’s registration system to complete Yoris’s nomination before the official deadline ([Armas and Sequera, 2024a](#)). The inability to register Yoris intensified concerns that the regime would use procedural obstacles, not only formal bans, to determine which opposition figures could appear on the ballot.

To preserve a place on the ballot, the opposition registered Edmundo González Urrutia, a retired diplomat and former ambassador, as a provisional placeholder candidate. González was widely unknown prior to 2024, but the fact that he was formally registered in front of CNE allowed him to become the vehicle through which Machado, the *Plataforma Unitaria*,

and the broader opposition could coordinate electorally after Machado and Yoris were barred from running. Over the following months, Machado campaigned across the country in support of González, effectively converting the election into a contest between Maduro and a unified opposition ticket headed formally by González but politically anchored by Machado’s primary victory ([Armas and Sequera, 2024b](#)).

This sequence is crucial for interpreting the election. The 2024 contest was not an ordinary incumbent-opposition election in which the opposition freely selected and registered its preferred candidate. Rather, it was a constrained election in which the opposition’s first-choice candidate won a primary but was barred, its designated replacement was prevented from registering, and its eventual candidate emerged through a last-minute strategy to maintain ballot access. The opposition’s subsequent campaign therefore rested on two linked claims: that Machado’s primary victory provided the democratic mandate for opposition unity, and that González’s candidacy was a legally viable vehicle for that mandate.

2.5 Opposition mobilization, *comanditos*, and the defense of the *actas*

The opposition’s path to victory needed more than a candidate that could channel Machado’s mandate. It also depended on being able to prove a potential victory independently from CNE, which required an extensive election monitoring operation. The campaign organized local volunteer structures known as *comanditos*, which were designed to mobilize voters, coordinate local campaigning, and support election-day monitoring. These structures were particularly important because the opposition faced an uneven institutional environment: limited media access, pressure on activists, arrests of campaign associates, and uncertainty over whether witnesses would be able to obtain the paper *actas* after the close of voting ([Jiménez, 2023](#)).

The most important operational objective was to secure copies of the *actas*. Under Venezuelan electoral procedure, each voting machine produces paper tallies after polls close,

and accredited party witnesses are entitled to receive signed copies. The opposition’s election-day plan therefore depended on placing witnesses at all voting precincts, training them to remain until the poll closing process was complete, and instructing them to obtain and transmit the printed *acta*. This strategy transformed the *acta* into the central object of post-election verification. If the CNE refused to publish disaggregated results, the opposition could use its own archive of *actas* to reconstruct the precinct-level vote.

This witness operation is directly related to the empirical contribution of this paper. The opposition’s ability to scan and upload *actas* created a parallel information stream. Each uploaded *acta* contained the precinct-level result and the timestamp of when the *acta* was printed and transmitted.⁴ As a result, the opposition scans allow us to recover not only what the precinct result was, but also when the result became available through the official channel and when it entered the opposition’s parallel monitoring system. The 2024 election therefore provides an unusual opportunity to study the real-time, asymmetric evolution of electoral information gathering under authoritarian conditions.

2.6 The voting-system architecture

Understanding the voting-system architecture is necessary for interpreting both the dispute over the results and the timing variables used in this paper. Venezuela’s CNE operated approximately 30,280 biometric touch-screen machines across roughly 15,960 polling places. The system descends from the SAES-4000 lineage, originally associated with Smartmatic and, since 2018, with the Argentine vendor Ex-Clé. Each machine authenticates voters biometrically, records votes electronically, and prints a voter-verifiable paper receipt, which voters deposit in a ballot box. After polls close, the machine prints a paper *acta* reporting vote totals by candidate. The *acta* includes a QR code, an alphanumeric code, and a digital signature. Immediately after the *acta* is printed, the machine transmits results electronically,

⁴Contingent on transmission network access, results are transmitted from voting machines to CNE automatically after printing, so the print timestamp works as a proxy of when precinct-level information became available to the government before transmission delays started after 7:30pm on election day.

through the official telecommunications infrastructure, to the CNE’s National Tallying Center. By law, each candidate’s accredited witness is entitled to receive a signed paper copy of the *acta*. In addition, roughly half of ballot boxes are subject to a citizen verification procedure (*verificación ciudadana*) comparing the totals in the *acta* to the paper receipts deposited in the ballot box, granting additional certainty to the *acta* results ([Kronick, 2024](#); [United Nations Panel of Experts, 2024](#)).

This architecture matters because it creates multiple records of the same precinct-level result. The electronic transmission provides the CNE with an official flow of results. The printed *acta* provides a local paper record. The witness copy allows parties to verify the result independently. The QR code provides a digital record that eases the scanning and aggregation of results. In ordinary circumstances, these records should be mutually consistent. In the 2024 election, the CNE’s failure to publish disaggregated precinct-level results made the opposition’s *acta* archive the central source for localized results.

2.7 Election night: from poll closing to competing claims of victory

The regime entered election day with control over the formal electoral apparatus but without full control over the social and organizational conditions of the vote. Opposition witnesses, local volunteers, and *comanditos* had been instructed to remain at voting centers to obtain and protect copies of the printed *actas*. Once polls closed, the relevant political contest shifted from turnout to information: documenting the results of the election independently as soon as possible.

Legally, polling stations were scheduled to close at 6:00 p.m. unless voters remained in line. In practice, the closing process was uneven. Some centers remained open, including in areas where the government hoped for late pro-regime mobilization. In other locations, opposition witnesses reported pressure, delays, or obstacles in obtaining the printed tally sheets. These incidents mattered because the *acta* was the central evidentiary object of the night. Once a voting machine closed, it printed an *acta* containing the precinct-level

vote totals. Only after that printout did the result enter the official electronic transmission channel. Accredited witnesses were entitled to receive copies, but those copies still had to be photographed, scanned, transmitted, and aggregated by the opposition's parallel system.

The events of the evening unfolded inside an informational gap in which the opposition documented information with a significant lag relative to the official printing and transmission process. Between 7:30 and 7:50 p.m., reports began to circulate that voting machines were taking longer than usual to transmit results. Sources close to the electoral process described this delay not as an external cyberattack, but as an intentional obstruction of the reception of results on one of the CNE's tallying servers. The effect, according to that account, was to slow the arrival of official results and prevent a quick declaration of González's victory while senior electoral and regime officials searched for a way to manage the adverse count. At approximately the same time, opposition witnesses and opposition-linked electoral actors reported being denied access to CNE totalization rooms in Caracas. These restrictions were consequential because access to totalization rooms would have reduced the regime's informational advantage. ([Caracas Chronicles, 2024](#); [Kurmanaev, 2024](#))

Transmission delays, opposition witness exclusion from CNE totalization rooms and pressure for precinct-level opposition witnesses not to collect their corresponding *actas* could all be seen as extending the information asymmetry between the opposition and the government - and extension that could allow the regime to prepare an official victory claim while the opposition still lacked sufficient documentation to immediately falsify it. This is the first key moment in which the chronology of events lines up with the model's mechanism. Once the official stream began revealing a regime loss, extending the window of opposition uncertainty became politically valuable for the regime. Delaying or interrupting the flow of information could help extend the window in which the regime knew more than the opposition could prove.

By 9:00 p.m., the regime's public narrative about transmission disruptions began to shift toward the idea sabotage. Around that time, CNE officials informed Rector Juan Carlos

Delpino, a CNE rector associated with the opposition, that the electoral authority was being hacked - a claim later used to explain the slow transmission of results. The same account reports that transmission was proceeding at only about 58 percent of its usual speed ([Caracas Chronicles, 2024](#)). The timing is important. The cyberattack narrative did not emerge before the count began. It emerged after the official channel had begun to receive results and during the period in which the opposition’s acta-collection system still lagged behind. It provided an explanation for delay, justified the absence of disaggregated results, and bought time before the opposition could publish a sufficiently large archive of *actas*.

Shortly thereafter, regime-aligned political and military actors began to speak in ways that hinted at a Maduro victory. At approximately 9:30 p.m., Héctor Rodríguez declared that peace had prevailed and announced plans to celebrate at Miraflores, Venezuela’s government palace. Defense Minister Vladimir Padrino López later separately congratulated Venezuelans for voting “against sanctions” ([Caracas Chronicles, 2024](#)). These statements came before the CNE had issued its first official bulletin. Their content was ambiguous enough to avoid a precise numerical claim, but clear enough to prepare the regime’s audience for a Maduro victory.⁵ This began to construct a public narrative about a regime victory accompanied by foreign technical disruptions and interference, and the corresponding need for order and respect of soon-to-be-announced official results.

The opposition’s position was different. By late evening the opposition had accumulated only a fraction of the nationally available *actas*. Until enough *actas* had been centrally collected and digitized, the opposition remained uncertain about the outcome, and a public declaration of victory and further bold action would be grounded on insufficient evidence. Between 10:00 and 11:00 p.m., Venezuelan television announced that the electoral authority would soon hold a press conference to deliver the first bulletin. At that point, an opposition spokesman finally took the stage and confirmed that, while partial tallies were favorable,

⁵Venezuelan law prohibits publicly declaring a specific election result before CNE releases its first bulletin of results. Hence, public statements after polls close usually hint at an outcome through indirect statements and facial expressions without explicitly verbalizing it.

they had only been able to collect around 30% of all *actas* (T13, 2024; [Diario La Nación, 2024](#)). Shortly after, Elvis Amoroso, the CNE president, announced the first CNE bulletin. The CNE declared Maduro the winner with 51.2 percent of the vote against 44.2 percent for González, alleging approximately 80 percent of *actas* counted, and describing the trend as irreversible. The announcement was not accompanied by precinct-level results, as was the case in prior elections, and which was necessary to verify the aggregate figures.

The bulletin’s numerical form also raised immediate suspicion. The announced percentages appeared unusually exact.⁶ Further reports claim that the bulletin read by Amoroso was printed from his office, rather than generated through the ordinary totalization room, and argues that senior CNE officials would have known that the figures were implausible given the underlying registry and transmitted data ([Caracas Chronicles, 2024](#)). Maduro soon appeared from Miraflores, framing the announcement as a victory of peace and stability. This rhetoric completed the regime’s election-night sequence.

The opposition responded about an hour after the CNE announcement, challenging the official result and asserting González’s victory. At the late-night press conference, Machado and González stated that the opposition had obtained a substantial share of the *actas* and that those documents showed a large opposition lead. In the following days, the opposition began to transform its evidence from internal information into public verification. On July 30th, it released a growing archive of scanned *actas*, eventually covering more than four-fifths of voting machines, and made those documents available through an online platform where citizens could verify the tally from their own polling place. Independent journalistic and academic analyses subsequently examined the published *actas* and found them consistent with a decisive González victory. The elections were immediately followed by protests that spread around the country, and this wave of dissent was heavily repressed while the CNE officially proclaimed Maduro as president elect bypassing the legal audit and verification processes. The country’s attorney general bolstered the foreign “North Macedonian” cyberattack narrative as

⁶Andrew Gelman, a renowned statistician and political scientist, argued that “There’s roughly a 1 in 100 million that this particular pattern would happen by chance” ([Gelman, 2024](#)).

the explanation for transmission delays on election day. Table 1 summarizes our election-night chronology.

Table 1: Election day chronology

Time	Actor	Event
6:00 p.m.	CNE / voters	Legal poll-closing time. In practice many centers stayed open for queuing voters; some closed on time
~6–7 p.m.	Voting machines	After lines cleared, machines printed actas and began transmitting encrypted totals over the country’s telecommunication’s network. Transmission proceeded normally through early evening.
~7–9 p.m.	Voting machines and CNE HQ	Reports of 2-hour transmission disruptions between voting machines and CNE HQ
~7–9 p.m.	Opposition witnesses at CNE HQ	Opposition’s credentialed <i>testigos</i> denied entry to CNE’s totalization room; Enrique Márquez’s monitor reported the CNE “did not print the results.”
~9:00 p.m.	CNE internal (Rector J. C. Delpino)	Rectors first told internally that CNE was being “hacked”—the first internal invocation of the cyber-attack narrative. Transmission reportedly slowed to ~58% of normal speed.
~9:27 p.m.	PSUV / Héctor Rodríguez	Ruling-party official announced “peace has prevailed” and plans to celebrate at Miraflores—ahead of any CNE bulletin. Defense Minister Padrino López followed.
~11:45p.m.–midnight	Opposition	Opposition spokesman confirms they have only collected around 30% of actas, asks CNE not to release fraudulent results.

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Table 1 – continued from previous page

Time	Actor/Component	Event
~12:10 a.m. July 29	CNE President Elvis Amoroso	First CNE bulletin on national TV. Maduro 51.2% (5,150,092); González 44.2% (4,445,978); others 4.6% (462,704); turnout 59%; 80% of actas counted. Declared trend “irreversible.” Blamed delays on sabotage.
~12:30 a.m.	Maduro	From Miraflores: “triumph of peace and stability.”
~1:00 a.m.	Machado and González	First opposition press conference at Comando ConVzla HQ. Machado: “Venezuela has a new president-elect, and his name is Edmundo González Urrutia.” Claimed >40% of official actas in hand, showing González ≈ 70% vs. Maduro ≈ 30%. Cited Edison (65/31) and Meganálisis (65/14) exit polls.
July 29	Citizens	Protests throughout the country start in response to the results published by CNE. Hugo Chavez’s statues torn down in different parts of the country.
July 29	Peru, CR, Chile, Argentina, Uruguay, DR	Declined to recognize result without disaggregated data.
July 29	AG Tarek William Saab	Formally accused “hackers from North Macedonia” of a cyberattack that “manipulated data received by the CNE”; named Machado, Leopoldo López, Lester Toledo as ringleaders. No evidence presented.
July 29	CNE/TSJ	Maduro officially proclaimed re-elected, bypassing normal verification/incidents process.
July 30	Carter Center	Public statement: election “did not meet international standards” and “cannot be considered democratic”; no evidence of a cyberattack.

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Table 1 – continued from previous page

Time	Actor/Component	Event
July 30	CNE	Cancelled the post-electoral telecommunications audit scheduled for 29 July—essential to investigate the alleged cyberattack. Two other post-election audits also cancelled.
July 30	Opposition site resultadosconvzla.com	Launched; requires Venezuelan cédula to query. By 31 July 09:04 CET: 81.21% of actas uploaded. Ultimately ~83–84% / 24,532–24,576 of 30,026 actas. Opposition tally: González $\approx$ 7.3M (67%); Maduro $\approx$ 3.3M (30%). Site blocked by Venezuelan ISPs within hours; defeated 44M+ attacks.
July 30 on-ward	Repression	First deaths among protesters; by mid-August $\geq$ 2,000 detained. ~70% of all July 2024 protests occurred on 29–30 July.

Note: All times Venezuela Standard Time (VET, UTC−4). Sources: [The Carter Center \(2024\)](#); [United Nations Panel of Experts \(2024\)](#); [Caracas Chronicles \(2024\)](#); [Kurmanaev \(2024\)](#); [T13 \(2024\)](#); [Diario La Nación \(2024\)](#); [Corrales and Kronick \(2025\)](#); [Kronick \(2024\)](#); [Inter-American Commission on Human Rights \(2025\)](#).

3 Data and Methods

3.1 Data Sources and Acta Archive

Our data come from *actas*, the official voting tallies produced at the level of the *mesa de votación*, for the Venezuelan presidential election held on July 28, 2024. The *mesa* is the smallest electoral unit at which votes are counted and reported, and events around each *mesa* should be monitored by two witnesses (*testigos*) from each party. Each *mesa* has a voting machine which, at the end of the day, prints the tallies (*actas*) for the results in that

mesa. *actas* record the vote count by candidate and party, as well as the final tally for the corresponding mesa. *Mesas* group into voting centers (*centros*). There are roughly 30,000 *mesas* in the country, and about 16,000 voting centers.

Because the Venezuelan electoral authority, the *Consejo Nacional Electoral* (CNE), did not publish disaggregated mesa-level results, we rely on a parallel, independently verified archive of *actas* collected by the opposition. The opposition coalition, deployed trained witnesses across most voting centers around the country. These witnesses were instructed to obtain copies of the *actas* once they were printed, so that they could be collected, scanned and transmitted them to a centralized opposition repository. The opposition subsequently made the archive of *actas* available online at <https://resultadosconvzla.com>. The website provides scanned copies and tallies for 85% of the mesa-level *actas*, and allows us to reconstruct both final vote totals and the timing with which information became available on election night.

The key empirical advantage of the opposition published *actas* is that they allow us to recover two distinct election-night timestamps. The first is the time at which the *acta* was printed by the voting machine, which we refer to as *Print Time*. The second is the time associated with the opposition witness’s scan or upload of the *acta*, which we refer to as *QR Time* or scan time.⁷ These two timestamps capture different information channels. Print Time proxies the moment at which the mesa-level result was generated and transmitted through the official electoral channel to the CNE totalization centers, providing a proxy for the time at which those results became available to the government.⁸ QR or Scan Times capture the moment at which the opposition’s parallel information collection system could incorporate the same mesa-level result.

This distinction is central to our empirical strategy. Because an *acta* is printed and transmitted to the government before it can be scanned or uploaded by an opposition witness,

⁷QR times for each of the scanned *actas* were provided to us by the *Comando con Venezuela*, the opposition’s campaign.

⁸While transmission delays started to occur at around 7:30 p.m., our point is that the result became clear to CNE and the government well before that point - triggering the delays as a tactic to widen the window of asymmetric uncertainty.

the official channel typically observes the result well before the opposition’s centralized operation does. The delay between the *acta*’s Print Time and QR Time therefore provides a measure of the temporal gap between the regime-side and opposition-side information sets. By exploiting these two timestamps, we can reconstruct how much information each side had access to at successive points during election night, documenting the asymmetry between both parties.

3.2 Acta Processing and Timestamp Extraction

The original data consists of scanned images of digital copies of *actas*. We transform this archive into an analytic mesa-level dataset through a multi-step data-processing pipeline. First, we extract the vote totals and identifying information needed to link each *acta* to a unique mesa. Second, we recover the timestamp printed on the *acta*. Third, we merge the resulting mesa-level file with QR timestamps from the opposition’s collection system. Finally, we merge this *mesa*-level data with registered-voter totals and historical election returns.

The print time variable is extracted from the *acta* itself. Each *acta* contains a machine-generated timestamp indicating when the voting machine produced the official tally after the mesa was closed. We recover this timestamp using optical character recognition (OCR) on the scanned *acta* images. The OCR procedure reads the relevant printed fields on the *acta*, extracts the date and time strings, and converts them into a standardized datetime format. Because OCR output may contain transcription errors, we apply rule-based cleaning to correct common formatting inconsistencies and to flag impossible or implausible values.

The interpretation of print time is institutional rather than mechanical. The printed *acta* is produced as part of the closing process of the electronic voting machine. At this stage, the result is generated and transmitted through the official electoral telecommunications infrastructure. We therefore interpret print time as a proxy for the earliest moment at which the CNE, and by extension, the Maduro regime, could incorporate the result from mesa *m* into their decision making.

The QR Time variable captures a different process. After the *acta* was printed, opposition witnesses scanned or uploaded the document to the opposition’s centralized system. We use the timestamp associated with this scan or upload to measure when the opposition information system could incorporate that mesa’s result. We refer to this timestamp as QR Time, although substantively it should be understood as the time at which the opposition’s digitization or upload process registered the *acta*. Unlike the print time, which is embedded in the machine-generated tally, QR Time was generated by the opposition’s collection and upload infrastructure, and was provided to us by the opposition’s campaign.

The final dataset is constructed by linking five sources: the 2024 mesa-level vote tallies, the OCR-extracted print time variable, the opposition scan/upload QR Time variable, the number of registered voters assigned to each mesa, and historical electoral returns later used to construct priors. We merge these sources using a unique mesa identifier constructed from the voting center code and mesa number. Because administrative codes are not always formatted consistently across raw files, we standardize all identifiers before merging. Where historical codes differ across election years, we use a parish-level crosswalk and broader geographic aggregates as fallbacks. The historical priors are drawn from Venezuela’s most recent non-boycotted presidential election, that of 2013.

This data construction process effectively yields two parallel election-night panels. In the print time panel, a mesa is treated as observed once its printed timestamp indicates that the official result was generated and transmitted through the CNE-information channel. In the QR Time panel, the same mesa is treated as observed only once the opposition scan or upload timestamp indicates that the opposition-side information system could access the result. Comparing these panels allows us to estimate the arithmetic count of votes across time, and when the final outcome became statistically irreversible from the perspective of each actor’s information set.

3.3 Electoral Geography and Unit of Analysis

Our empirical analysis is conducted at the level of the *mesa de votación*. Each mesa is located within a voting center, or *centro*. Voting centers are nested within parishes, parishes within municipalities, and municipalities within states. This hierarchy is central to our forecasting design. Mesas located in the same center or administrative units are likely to share social, economic, logistical, and political characteristics. The model therefore does not treat mesas as independent observations. Instead, it uses the electoral geography to structure both local learning and correlated uncertainty.

For each mesa m , the dataset includes opposition votes O_m , chavismo votes C_m , total votes V_m , and registered voters R_m . The total vote count V_m is defined as the sum of valid votes for Gonzalez or for Maduro. The principal forecasting target is the final national opposition vote share,

$$\theta = \frac{\sum_m O_m}{\sum_m V_m}.$$

We are interested in the posterior distribution of θ as information accumulates throughout election night. In the main two-bloc version of the analysis, the election is treated as statistically decided for the opposition when $\theta > 0.5$. Because Venezuela’s presidential election is decided by national plurality rule, this is a standard-vote forecasting problem rather than an electoral-college or seat-allocation problem. The modeling task is to infer the posterior distribution of θ from incomplete mesa-level returns observed at successive moments in time.

Our goal is not simply to estimate the final result ex post. Rather, we aim to reconstruct the evolution of information on election night. Beginning at poll closing, which occurred at 6:00 PM on July 28, 2024, we divide the night into 5-minute intervals. At each interval, we identify which mesas had become available to a given actor, condition the model on those observed results, and simulate the result for unobserved mesas. This produces a sequence of

posterior predictive distributions that trace when the election outcome became statistically irreversible from the perspective of each actor’s asymmetric information set.

3.4 Time-Stamped Information Sets

For each mesa m , let T_m denote the timestamp at which the result becomes available in a given information stream. In the print time analysis, T_m is the OCR-extracted print timestamp from the *acta*. In the QR Time analysis, T_m is the opposition scan or upload timestamp. For any cutoff time t , we define the observed set of mesas as

$$\mathcal{O}_t = \{m : T_m \leq t\},$$

and the unobserved set as

$$\mathcal{U}_t = \{m : T_m > t \text{ or } T_m \text{ is missing}\}.$$

The forecast is indexed by t . At each cutoff, the model conditions only on the results in $\mathcal{O}_t$, simulates results of mesas in $\mathcal{U}_t$, and generates a posterior predictive distribution for the final national vote share. This setup turns the retrospective analysis into an election-night replay in 5-minute intervals. The exercise asks what could have been inferred at each moment using only the information that had arrived by that time. We conduct this simulation for both timestamps in order to construct a “view” of the information available to each actor across the night. We also additionally calculate the simple cumulative voting tally, as well as the votes required by Maduro to overturn the result at each point, assuming that every remaining mesa ends up having 100% turnout.⁹

The time-stamped structure is especially important because election-night returns do not arrive randomly. Early-reporting mesas may differ systematically from later-reporting mesas for logistical, geographic, or political reasons. They may be smaller or larger, more

⁹In another specification, we assume that the turnout for missing mesas is the average turnout of all observed mesas. Results are qualitatively similar.

urban or more rural, or drawn disproportionately from politically favorable areas for one side. Treating the observed set $\mathcal{O}_t$ as a random sample of all mesas would therefore be inappropriate. The modeling strategy explicitly recognizes that partial returns are both informative and potentially selected. This is the central problem of election-night forecasting models: the model must be able to learn from early returns, and update accordingly, without assuming that they are representative of the country as a whole.

3.5 Historical Priors

To forecast mesas that have not yet reported, the model requires prior expectations about turnout and vote choice. We construct these priors using historical returns from the 2013 Venezuelan presidential election, the most recent presidential election prior to 2024 with comparable national coverage. The 2013 election provides a baseline measure of local political alignment.

For each voting center, the historical data provide opposition votes, total votes, registered electors, and abstentions. From these quantities, we construct two prior measures: a historical turnout rate and a historical opposition vote share conditional on turnout. Where historical returns can be matched directly to a 2024 voting center, we assign the corresponding historical turnout and opposition share to mesas within that center. Where exact center-level matches are unavailable, we use parish-level historical aggregates as fallbacks. This approach preserves local historical structure while maintaining coverage of the 2024 mesa universe.

The historical data provide informative starting points. In areas where 2024 returns have not yet arrived, the model begins from the historical pattern. As current returns become available from nearby mesas, the model updates away from that prior. Thus, the historical archive serves as a scaffold for inference. This empirical-Bayes use of historical data is consistent with election forecasting practice, in which past electoral outcomes define local baselines while current returns determine the direction and magnitude of updating.

3.6 Methodology

3.6.1 Forecasting Problem and Inferential Target

At each cutoff t , the inferential goal is to estimate

$$\Pr(\theta \geq 0.5 \mid \mathcal{I}_t),$$

where $\mathcal{I}_t$ denotes the mesa-level information available at time t . The information set $\mathcal{I}_t$ differs depending on what kind of timestamp measure we use.

The model proceeds in three steps at each cutoff. First, it constructs historical priors for turnout and opposition vote share. Second, it updates the expected outcomes of unobserved mesas using current-election information from geographically local units, specifically the mesa’s own voting center and parish. Third, it simulates the remaining unobserved mesas repeatedly under a correlated uncertainty structure and aggregates observed and simulated mesas to obtain a posterior predictive distribution of the national result.

The first two steps determine the model’s expected value for each unobserved mesa. The third step propagates uncertainty from missing local returns into uncertainty over the national outcome. This separation is deliberate. The model learns locally, but it allows uncertainty to remain correlated across broader geographic units.

3.6.2 Turnout and Opposition Share Forecasting

The model separately forecasts turnout and opposition vote share conditional on turnout. For mesa m , let

$$V_m \in \{0, \dots, R_m\}$$

denote total votes cast out of R_m registered electors. Let

$$O_m \in \{0, \dots, V_m\}$$

denote opposition votes out of total votes cast. We represent turnout as

$$V_m \sim \text{Binomial}(R_m, p_m^{(T)}),$$

where $p_m^{(T)}$ is the turnout probability. Conditional on turnout, opposition votes are represented as

$$O_m \sim \text{Binomial}(V_m, p_m^{(O)}),$$

where $p_m^{(O)}$ is the opposition vote share among votes cast.

This decomposition is substantively important. Turnout and partisan support may vary for different reasons and may have different geographic patterns. A mesa can be historically opposition-leaning but low-turnout, or high-turnout but not especially opposition-leaning. Modeling these quantities separately allows the forecast to capture both forms of uncertainty. This is especially relevant in the Venezuelan context because opposition areas may have been relatively affected by the country’s migrant crisis between 2013 and 2024, as opposition voters were more likely to migrate and become disenfranchised ([Morales-Arilla et al., 2025](#)).

3.6.3 Historical Priors and Bayesian Parameterization

For each mesa m , the model begins from historical prior means,

$$\pi_m^{(T)} \approx \text{historical turnout rate}, \quad \pi_m^{(O)} \approx \text{historical opposition vote share}.$$

These priors are based on 2013 returns matched to the relevant voting center or, when necessary, to a broader geographic unit. The priors are then embedded in Beta distributions. For a generic geographic level g , turnout is parameterized as

$$p_g^{(T)} \sim \text{Beta}(\alpha_{0g}^{(T)}, \beta_{0g}^{(T)}),$$

and opposition share as

$$p_g^{(O)} \sim \text{Beta}(\alpha_{0g}^{(O)}, \beta_{0g}^{(O)}).$$

The prior means are chosen to match the historical turnout and opposition share at the relevant level. The prior concentration parameters are calibrated using historical dispersion across local units. This produces an empirical-Bayes prior: the model is Bayesian in that it defines explicit prior distributions and updates them with observed data, and empirical in that the prior hyperparameters are estimated from the historical electoral archive.

3.6.4 Local Live Updating of the Posterior Mean

The preferred specification updates the posterior mean of unobserved mesas using only local current-election information. Specifically, updating occurs first within the mesa’s voting center and then within its parish. Municipality-, state-, and national-level returns do not directly shift the posterior mean. Their role is reserved for the uncertainty structure described below.

This design reflects the substantive and statistical concern that early broad-area patterns can be misleading when reporting order is non-random. A small number of early-reporting mesas should not automatically shift expectations for distant or only weakly related mesas. By restricting mean updating to the center and parish levels, the model forces current-election learning to occur through nearby returns.

At each cutoff t , for each voting center c , the model aggregates the observed mesas in that center and updates turnout and opposition share using Beta-Binomial conjugacy:

$$p_c^{(T)} \mid \mathcal{I}_t \sim \text{Beta} \left(\alpha_{0c}^{(T)} + V_c^{\text{obs}}(t), \beta_{0c}^{(T)} + R_c^{\text{obs}}(t) - V_c^{\text{obs}}(t) \right),$$

$$p_c^{(O)} \mid \mathcal{I}_t \sim \text{Beta} \left(\alpha_{0c}^{(O)} + O_c^{\text{obs}}(t), \beta_{0c}^{(O)} + V_c^{\text{obs}}(t) - O_c^{\text{obs}}(t) \right).$$

An analogous update is constructed at the parish level. The posterior means from the center and parish updates are used to shift the prior expectation for each unobserved mesa. When a center has substantial observed information, center-level evidence receives the most weight. When center-level information is limited, parish-level information contributes more. If neither center nor parish provides meaningful current-election information, the model remains close to the historical prior.

This is a constrained partial-pooling design. The model may depart from historical priors, but it does so through local observed returns rather than through broad-area extrapolation. This preserves the intuition that nearby mesas are informative about one another while reducing the risk that early, geographically selected returns cause premature convergence.

3.6.5 Reporting-Order Adjustment

The model begins with historical expectations for every mesa. As results come in, it learns from nearby reported mesas, especially those in the same voting center and parish. But it does not assume that a few early results perfectly represent every unreported mesa. Instead, it gradually blends the new local evidence with each mesa’s historical baseline. That is the first form of shrinkage.

At the same time, the model preserves uncertainty about the remaining mesas even after it has learned from nearby returns. This prevents the forecast from becoming overly confident or declaring the race effectively decided too early. As more evidence accumulates, the model becomes more responsive and more certain, but it does so gradually rather than treating early returns as definitive.

These adjusted weights are used only when updating turnout and opposition support at the voting-center and parish levels. They affect both how far the local posterior moves away from the historical prior and how much confidence the model places in that movement. They do not alter the actual reported vote totals: once a mesa has reported, its realized votes are held fixed and enter the national simulations exactly once. This reporting order adjustment

changes only how strongly the observed mesas inform expectations for the mesas that remain unobserved, not how observed mesas alter the posterior mean.

3.6.6 Simulation of Unobserved Mesas and Correlated Uncertainty

After updating the expected turnout and opposition share for each unobserved mesa, the model simulates the remaining mesas repeatedly. Observed mesas are held fixed at their realized values. Unobserved mesas are drawn from predictive distributions centered on their locally updated expectations.

The simulation allows errors to be correlated across geography. Although municipality-, state-, and national-level returns do not directly shift the posterior mean, the model allows unobserved mesas in the same broader geographic units to move together through shared shocks. This reflects the fact that forecast errors are unlikely to be independent across mesas. A group of mesas in the same municipality or state may all end up somewhat more or less opposition-leaning than predicted by their local priors and nearby observed returns.

For each simulation draw, the model generates turnout and opposition votes for all unobserved mesas, combines them with the observed mesa returns, and computes the implied national opposition vote share. Repeating this procedure yields a posterior predictive distribution for θ at each cutoff t . The estimated probability of opposition victory is the share of simulations in which the national $\theta > 0.5$.

This procedure produces a sequence of election-night forecasts: one for each 5-minute interval and for each information stream. The resulting estimates allow us to evaluate when the opposition victory became statistically irreversible from the perspective of the official print time information set and when it became statistically likely from the perspective of the opposition QR time information set.

3.7 Interpretation of the Election-Night Replay

The replay design should be interpreted as a reconstruction of information, not as a claim about subjective beliefs held by any particular actor. At each time t , the model asks what could be inferred from the mesa-level results that were available by that moment, combined with historical priors and the geographic structure of the electorate. The comparison between results based on the timestamps then reveals how differences in access to mesa-level information affected the timing with which the election outcome became statistically apparent.

This approach is particularly useful in the Venezuelan case because the relevant political question concerns not only the final result, but also the timing of knowledge. If the final outcome was inferable from the official transmission stream before it was inferable from the opposition scan stream, then the electoral authority and incumbent regime plausibly had earlier access to decisive information. This asymmetric information problem contextualizes the decisions taken by the Maduro regime during the night of July 28th. Conversely, the QR time replay estimates when the opposition’s parallel monitoring system had accumulated enough information to reach a comparable conclusion and be able to “call” the election.

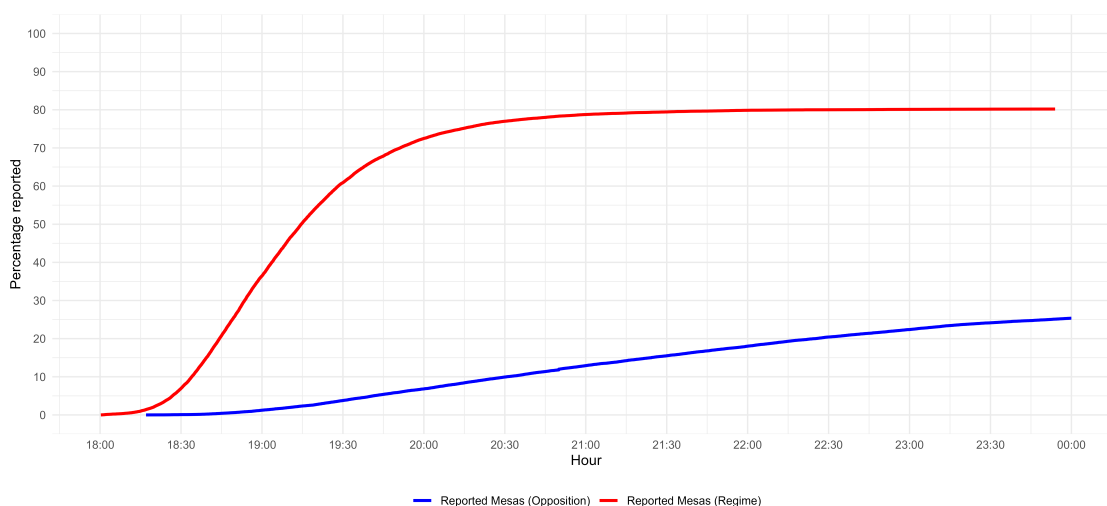
4 Results

We separate our results in two parts. First, we focus only on the cumulative vote counts. We show how vote counts evolved after polls closed and tabulation efforts commenced, both from the perspective of the regime and the opposition. We plot the share of *mesas* that had reported at any given time, as well as the share of votes earned by each of the two main candidates. In addition, we also plot a line that shows how many of the remaining outstanding votes Maduro would have had to earn for him to win the election. This is what we refer to as the “arithmetic” results. Given Venezuela’s simple first past the post election rule, it suffices to earn above 50% of all casted votes to win the election.

To begin this process, we first plot the share of mesas and votes that had been reported,

either in the form of the *acta* being printed and in turn transmitted to the CNE or the *acta* being scanned by the opposition witnesses and in turn having the information become available to them. Figure 2 shows what proportion of information was available to each party at different times. We show the share of reported *mesas* from the regime’s perspective. By 9 p.m., the regime had already received information from well above 75% of all *mesas*. In contrast, the opposition had only been able to scan 25% of all *mesas* by midnight.

Figure 2: Reported Mesas Over Time

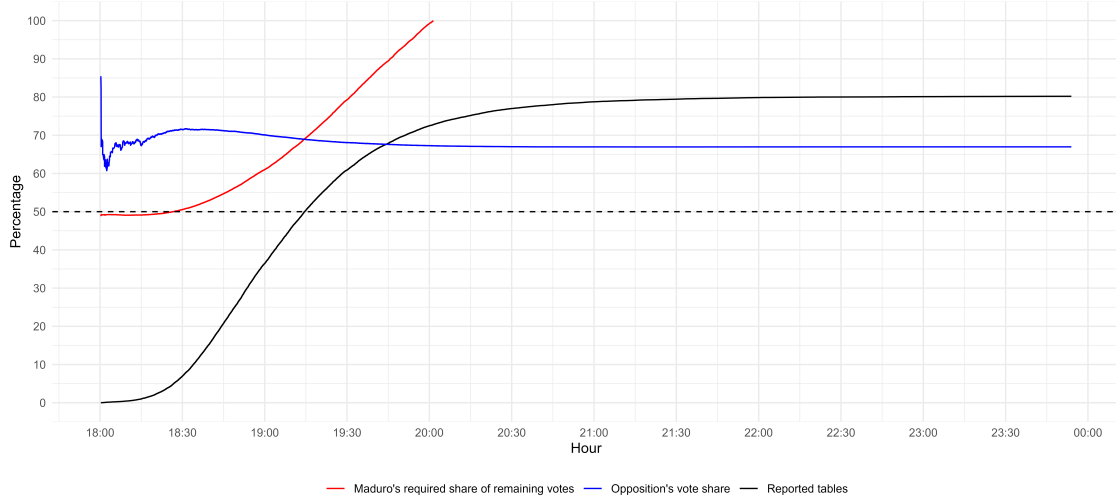


Note: The figure shows the cumulative reporting progress from the regime and opposition data streams over the course of election night. The red line measures the share of all mesas for which an official acta-print timestamp is available, while the blue line measures the share for which an opposition scan timestamp is available. Reporting progress is calculated as the cumulative number of observed mesas divided by the nationwide total number of mesas. The regime-linked records accumulated rapidly during the early evening while the opposition expanded more gradually and covered approximately 25 percent of mesas by midnight. The figure illustrates the timing and coverage of the two reporting information streams. *Source:* ResultadosConVenezuela and Authors’ calculations.

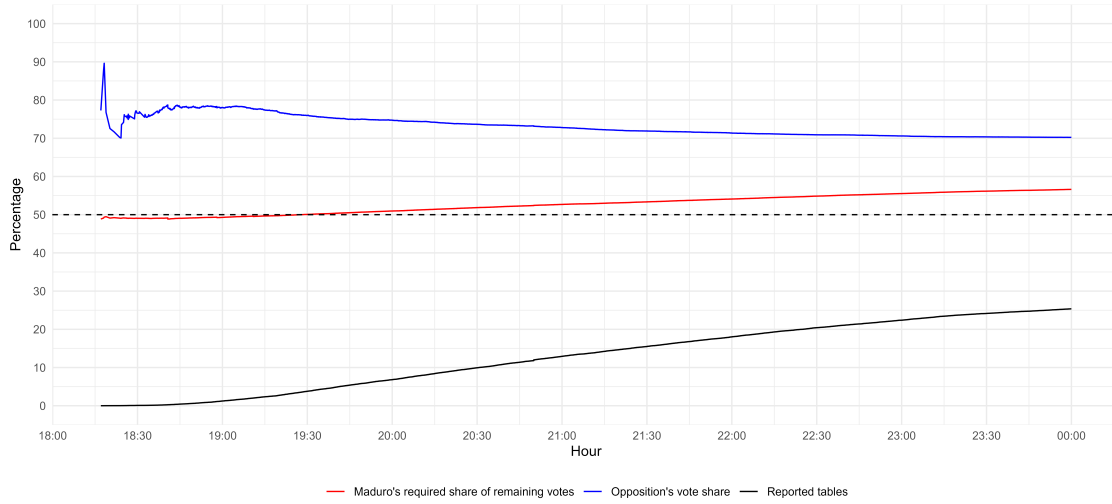
We now turn to calculate the share of votes each candidate had earned at each cutoff, and as a reference, we also plot the share of reported *mesas* based on the perspective of each party. Panel A of Figure 3 shows, from the perspective of the government, how many votes the opposition had received (blue line), the share of *mesas* with reported information (black line) and what fraction of outstanding votes Maduro would need to earn to win the election

(red line). At first, earning about 50% of all outstanding votes would have had Maduro winning. However, as results start to arrive, the share of uncounted votes needed by Maduro to overturn the partial result starts to increase rapidly. By 7p.m., Maduro's required share of standing votes was about 63%. At around 8 p.m., overturning the partial result became arithmetically impossible, as the complete set of standing votes became smaller than the partial Gonzalez's advantage. The picture is very different from the opposition's perspective, as information collection was much slower. As mentioned above, by midnight, the opposition had only scanned 25% of all *actas*, so despite the opposition candidate earning roughly 70% of counted votes, Maduro could still win the election if he were to earn about 60% of standing votes. Overall, while the regime was arithmetically certain of their defeat by 8 p.m., the opposition lacked such certainty throughout election night.

Figure 3: Maduro's required shared of remaining votes



(a) Regime Perspective



(b) Opposition Perspective

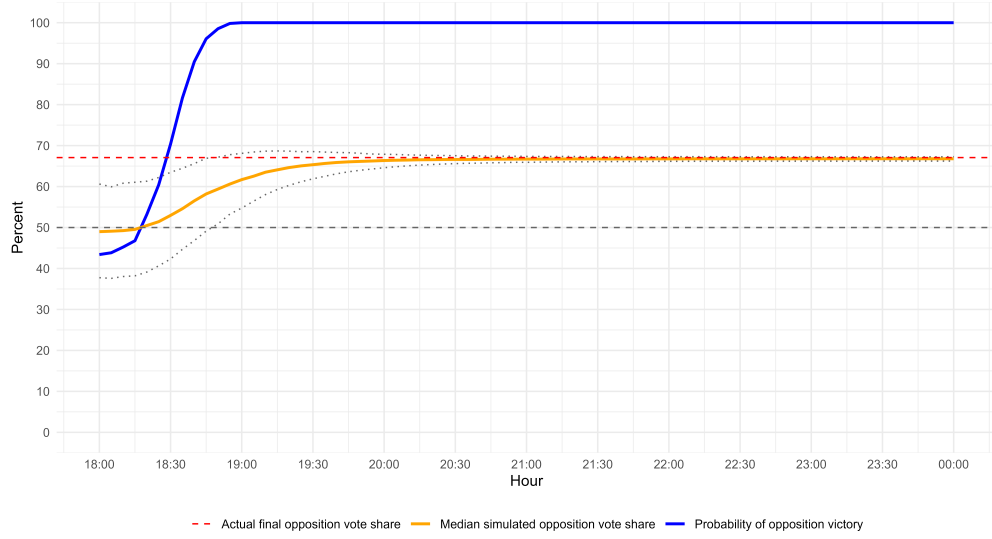
Note: The plots present the evolution of three quantities over election night from both reporting perspectives. In both panels, the blue line shows the opposition's cumulative share of votes; the red line shows the share of the outstanding votes that Maduro would need to win in order to flip the election, and the black line shows the cumulative percentage of mesas that have been reported. The dashed horizontal line marks 50 percent for reference. Panel A reports these quantities from the regime's side. Maduro's required share of the remaining vote increases sharply and exceeds 100 percent before 20:00, meaning the opposition lead could no longer be overcome. Panel B uses the opposition's side. From their point of view, Maduro's required share rises much more slowly, suggesting he could still overturn the election. *Source:* ResultadosConVenezuela and Authors' calculations.

While the arithmetic perspective provides a simple, transparent and intuitive way to understand the amount of information available to each actor at different times, we also conduct an empirical-Bayes model of updating *mesa*-level results. As described in Section 3, we simulate the election outcomes in 5-minute intervals after polls closed from the perspective of both parties, under the assumption that unreported *mesas* with priors from past elections start to behave like nearby reported *mesas*. Our attempt is to model a prediction of what the final outcome of the election will be, not just based on information available at every cut off, but using that information to shape and updated beliefs of what the final election result will be. If one candidate is doing surprisingly well in an area where they normally do not, the model will update to reflect this political shift. If turnout rates are also well above or below typical, the model reflects this. While we do not claim that either party had access to such a tool, we constructed this “election-replay” tool to build a sense of the statistical likelihood of an opposition victory from both perspectives at different times during the night.

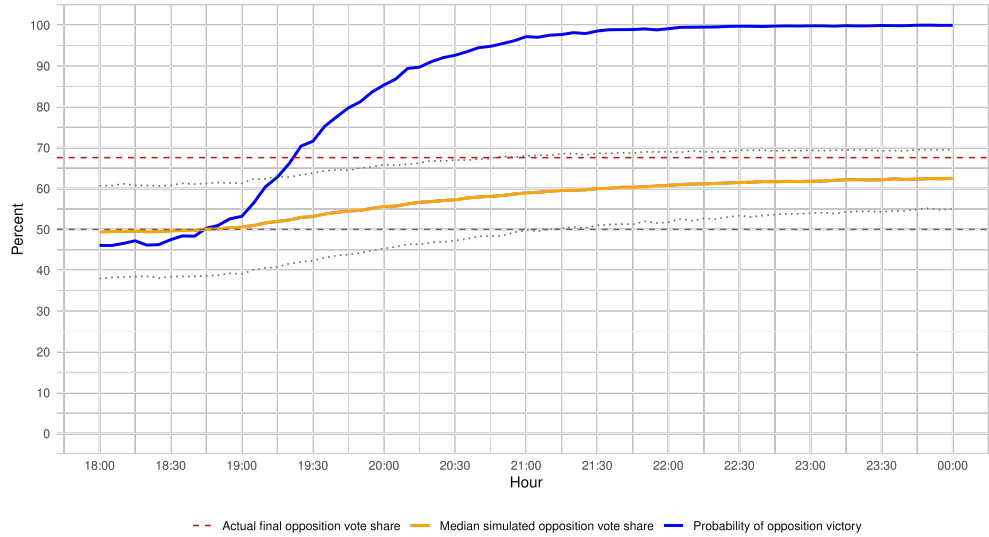
We conduct 5,000 simulations for the final predicted opposition vote share for each 5 minute interval during the night of the election. Figure 4 plots the actual final opposition vote share, the median simulated opposition vote share, and the probability of opposition victory during the night, from both the point of view of the regime and the opposition. Panel A suggests that, from the regime’s perspective, the result of the election was statistically irreversible before 7pm.¹⁰ Panel B plots the same simulation results but from the perspective of the opposition. Because information accrued more slowly for the opposition, their odds of winning do not reach irreversibility until after 9pm.

¹⁰By statistical irreversibility, we mean that none of the simulations from that point onwards delivers an opposition loss.

Figure 4: Simulation Results



(a) Regime Perspective



(b) Opposition Perspective

Note: The figure summarizes the evolution of the election night simulations from the regime and opposition perspectives. In both panels, the orange line shows the median simulated final vote share for the opposition candidate, while the gray dotted lines show the 2.5th and 97.5th percentiles of the simulated distribution. The blue line reports the simulated probability of an opposition victory. The red dashed horizontal line marks the opposition's actual final vote share, and the gray dashed horizontal line marks the 50 percent threshold. Panel A uses the regime-side reporting process. Panel B uses the opposition's process. The difference between the panels therefore reflects the timing and composition of the information available through the two reporting streams. *Source:* ResultadosConVenezuela and Authors' calculations.

Taken together, these results document the information asymmetries between the regime and the opposition. From an arithmetic perspective, the regime had arithmetic certainty of its loss by 8pm, while the opposition did not enjoy such certainty during election night. Perhaps most importantly, our statistical evidence suggests that information only available to the regime could confirm statistical irreversibility as early as 7pm - about one hour after polls started to close. However, the scanning of *actas* could not allow the opposition to infer its victory with such degree of certainty until 9pm.

As mentioned in the introduction, the opposition’s statistical verification strategies did not build on empirical bayesian forecasting methods, but on overlapping quick counts that most likely did not provide the opposition with statistical certainty about their victory on election night. For example, the “Altavista” quick count ([AltaVista, 2024](#)), which precisely predicted the election result, leveraged data from *actas* being scanned on the afternoon of July 30th. By Midnight on July 28th, Altavista had only scanned 352 *actas* - about 35% of the information used. Moreover, metadata from Altavista’s website shows that their results were published on July 30th. While our analyses suggest that the opposition’s data pointed to a statistically irreversible victory as soon as 9pm, the discussion above suggests that the opposition lacked such certainty about the results during election night.

5 Discussion

5.1 Election night through the lens of the model

The results above point to a consistent reading of election night: the Maduro regime had access to decisive information about the outcome much earlier than the opposition’s central command. From the official transmission stream, the opposition’s advantage became arithmetically irreversible well before the CNE’s first bulletin, and our simulation places statistical irreversibility from the regime’s perspective before 7 p.m. The opposition’s scan-based stream accumulated far more slowly: its volunteers could see that the scanned *actas*

avored González, but the archive remained incomplete for hours, and the opposition could not publicly substantiate a national victory on election night.

The model reads this asymmetry as strategically consequential in two ways. Ex ante, the regime’s control over the electoral authority and the official count guaranteed an informational advantage in the event of a loss. Because that advantage raises the probability that fraud succeeds against a timid opposition, it raises the expected value of the regime’s fallback option and, with it, the expected value of allowing a competitive election in the first place. On election night, the same advantage opened a window in which the regime knew it had lost while the opposition could not yet prove it had won—precisely the interval in which a defeated incumbent can coordinate institutional acquiescence around a fraudulent result before the opposition can react decisively.

The chronology lines up with this mechanism. Between roughly 7:30 and 9 p.m.—soon after the official stream had made defeat statistically undeniable to the regime—transmission of results was interrupted while opposition witnesses were denied access to the CNE’s totalization room. By 9 p.m. the regime began assembling a narrative of foreign cyber-sabotage, and shortly afterward regime and military figures started to hint at a Maduro victory. Near midnight, an opposition spokesman acknowledged that only about a third of the *actas* had been collected; the CNE’s first bulletin, declaring an “irreversible” Maduro victory without disaggregated returns, followed almost immediately ([Caracas Chronicles, 2024](#); [T13, 2024](#); [Diario La Nación, 2024](#)). Each of these moves operated on information rather than on votes, extending or exploiting the asymmetry between what the regime knew and what the opposition could prove.

The remainder of this section asks whether alternative accounts of the regime’s conduct—and of its decision to hold the election at all—fit the evidence as well. We organize them by the regime’s expectation going into the vote: explanations on which Maduro expected to lose, and explanations on which he perceived a high chance of winning.

5.2 Could the regime have expected to lose?

A first family of explanations holds that Maduro entered election day expecting defeat.

One possibility is that the regime allowed the election because it could not afford to cancel it. A presidential contest was constitutionally due, the Barbados framework and the prospect of sanctions relief raised the cost of an overt suspension, and the leadership may have been unsure whether the security forces would endorse calling off the vote outright. On this account, Maduro permitted a contest he expected to lose, intending to manage the result afterward. This explains entry without invoking any optimism about the vote, and it fits the regime's evident control over the post-election machinery. It sits less comfortably, however, with the cohesion the regime displayed *after* the fraud. If the leadership could not count on the military to support cancelling an election, it is not obvious why it could count on that same military to hold the line behind a blatant falsification and the repression that followed. The account is also silent on the night itself: it explains why the election happened, but not the specific sequence of disruptions that began only once the count turned.

A second possibility is that the fraud was fully premeditated: the regime knew it would lose, had arranged the acquiescence of the CNE and the military in advance, and treated election day as the execution of a settled plan, misjudging only whether the opposition could ever document the true result. This fits the apparent coordination of the electoral authority and the security apparatus in keeping information from opposition witnesses totalization rooms in Caracas and in voting precincts throughout the country, and it is consistent with the timing of the first bulletin, which followed within minutes of the opposition's public admission that it had collected only a minority of *actas*. Yet a fully scripted fraud is hard to reconcile with the improvisation visible on election night. If the result was under control from the outset, it is unclear why the regime needed to interrupt transmission for roughly two hours, bar witnesses from the totalization room, and assemble—only after the count was under way—a narrative of foreign cyber-sabotage it could not substantiate. These are the moves of an actor responding to information in real time and working to widen a window of

uncertainty, not of one carrying out a pre-arranged outcome.

A third possibility draws on the literature treating electoral fraud as a costly signal of regime strength ([Ananyev and Poyker, 2022](#); [Cunha et al., 2022](#)). On this view the regime did not merely steal the election but did so flagrantly, to demonstrate to elites, rivals, and society that it could impose an implausible result and pay no price. The brazenness of the announced margin is, on its face, consistent with such a display. The behavior surrounding the announcement is not. A regime confident enough to signal strength through fraud would have little need to manufacture a foreign-hacking cover story, withhold the disaggregated returns that previous elections had published, or scramble to manage the flow of information after polls closed. These are signs of strain, not of a calculated show of force. The very high risks and large costs the regime ultimately bore further weaken the idea that the manner of the fraud was a deliberate signal rather than the most defensible exit available once defeat became irreversible.

5.3 Could the regime have expected to win?

A second family of explanations holds that Maduro went into the vote expecting to win. There are several reasons he might have done so. The regime may have placed genuine confidence in its clientelistic apparatus—the CLAP food-distribution networks and the *1x10* mobilization structure—and in the various “procedural” advantages and irregularities short of outright tallying fraud ([Morales-Arilla and Traettino, 2024](#); [Morales-Arilla and Abbott, 2024](#)). It may have suffered from ordinary optimism bias, or relied on faulty internal polling that flattered its prospects, as contemporaneous accounts describe Maduro’s inner circle being confident of victory and genuinely shocked by the result ([Kurmanaev, 2024](#)). Its own lieutenants may also have fed Maduro with an encouraging picture, as figures close to Maduro may have held a more sober assessment than they conveyed, but could contemplate the political survival of Chavismo while losing of Maduro himself.

The possibility that Maduro overstated his chance of victory is not inherently in tension

with our argument, as the probabilities that drive our model regard the regime’s *perceived* chances of an electoral victory and of fraud success. The difficulty arises only if optimism is asked to carry the entire explanation. For miscalculation alone to account for the decision to hold the election, Maduro must have believed that he was almost certain to win so that preparing a fallback option was not necessary—a reading that is hard to square with what was known about voter preferences, when essentially all credible polling pointed to a decisive opposition advantage. Our account requires only moderate optimism together with a valuable fallback.

A related explanation locates the regime’s motive not in its odds of winning but in the value of the prize. The election was embedded in the Barbados framework and tied to the prospect of sanctions relief ([International Crisis Group, 2023](#); [U.S. Department of the Treasury, Office of Foreign Assets Control, 2023](#)); a credible contest, even a losing one, might have been judged worth the gamble for the international reintegration and domestic relegitimation it could unlock ([Farnsworth, 2025](#)). This consideration plausibly raised the appeal of holding the vote, and it too is compatible with our account. However, as a standalone explanation, the value of relegitimation necessary to justify a near-certain defeat with no fallback option would have to be implausibly large relative to the cost of losing power. In the context of the model, the regime did not need to value reintegration so extravagantly, because the informational asymmetry furnished a fallback that made entry rational even when the perceived probability of an honest victory was low.

5.4 Information asymmetry: Events, behaviors and comparisons.

These explanations are not mutually exclusive, and several capture something real: the regime probably could not cancel the vote costlessly, probably was too optimistic, and probably did value the chance of economic reintegration. What none of them explains on its own is the feature of election night that our account places at its center: the timing of events. The disruptions did not begin at the close of polls, upon the first returns or very late on

election day; they began once the official stream had made defeat statistically undeniable to the regime, around 7 p.m. The cyberattack narrative did not precede the count, as a pre-scripted cover would; it emerged only after results had started to arrive and the regime needed an account of the delay. And the first bulletin did not issue on a fixed schedule; it followed almost immediately upon the opposition’s public admission that it had collected only a minority of *actas*—the moment the regime learned that its informational advantage and opposition timidity were holding. This sequence is the signature of an incumbent sustaining and exploiting an information asymmetry in real time, not of pre-arranged theft, of simple panic, or of a calculated display of strength.

Several objections to our account, on closer inspection, reinforce it. It is true that election-night fraud is a risky strategy that has often backfired, toppling the incumbents who attempted it (Tucker, 2007; Bunce and Wolchik, 2011; Beissinger, 2007; Magaloni, 2007, 2010). We do not claim the regime acted with serene confidence or full control; the visible scrambling suggests the opposite, and the eventual scale of its legitimacy crisis confirms how costly the gamble proved. Our claim is narrower: that the informational advantage was the resource the regime reached for once it had to act, and that anticipating the availability of that resource is part of what made the election seem survivable for Maduro beforehand. Similarly, the asymmetry was itself a product of authoritarian capacity—it rested on control over the electoral authority. That is precisely why it was available as a fallback option, and why the regime could plan to lean on it should the count go badly. The information asymmetry is not a rival explanation to the regime’s institutional power; but a consequential mechanism through which authoritarian control enabled fraud as a fallback option.

The 1988 Chilean plebiscite illustrates the same mechanism in reverse. There too the government held back the official count as returns turned against it. The asymmetry broke not because the opposition forced it but because an insider did: General Fernando Matthei, arriving at La Moneda, told reporters that the “No” had won, citing the opposition’s parallel tabulation. That public statement created a moment of shared information that made the

result impossible to reverse; the junta then refused Pinochet’s bid for emergency powers, and the regime had to accept defeat ([Constable and Valenzuela, 1993](#)). Venezuela in 2024 is the reverse image. The regime kept the window of uncertainty closed, and comparable insider statements—Defense Minister Padrino López’s declaration that Venezuelans had voted “against sanctions”—pushed information toward a regime victory rather than away from it. In both cases, the decisive variable was the timeliness of shared, credible information about the result, which can either resolve the opposition’s coordination problem and make defeat irreversible or, if withheld, keep the spark from catching ([Kuran, 1989](#)).

Finally, the opposition’s conduct, too, fits the model rather than puzzling against it. The model predicts that an opposition facing an ambiguous victory claim under asymmetric information will act timidly, and that is what occurred. The caution during election day was rational on two grounds: the opposition lacked statistical or arithmetic certainty of its own victory for much of the night, and moving to a public declaration ahead of the CNE could have handed the regime a legal pretext to overturn a process the opposition expected to win. Restraint under evidentiary lag is exactly the behavior the mechanism anticipates.

6 Conclusion

When does an incumbent have enough information to concede an election or not? How does this decision change in authoritarian contexts, where the incumbent controls the institutions that centralize information and certify the count? Why do autocrats allow for elections they may lose, and why do they often succeed at stealing them after losing? This paper argues that the answer may lie in the political value of asymmetric information after polls close. We present a model of election-day information asymmetries in competitive authoritarian settings. Autocrats enjoying such asymmetries are likely to face timid opposition during a window of uncertainty they can use to coordinate institutional acquiescence and enhance the chances of fraud success. As asymmetries improve the incumbent’s prospects in the event of

an electoral loss, they also induce them to allow for risky elections.

We build on this theory to analyze the events during the Venezuelan Presidential Elections of July 28, 2024. We develop a live replay of the information available to different actors at different moments on election night. Exploiting the opposition’s archive of printed tally sheets, we extract timestamps from the *actas* and use them to proxy when mesa-level information became available through the official transmission channel and through the opposition’s scan/upload channel. This allows us to estimate not simply what the final result was, but when that result became statistically and arithmetically difficult to overturn from each actor’s perspective. The results suggest that the official information stream revealed the regime’s defeat soon after polls closed, but the opposition could not fully document it until after election day.

This gap helps explain the sequence of irregularities observed on election night: obstacles to witnesses, interruptions or delays in transmission, allegations of a cyberattack, early hints at a Maduro victory, and the declaration of an irreversible Maduro victory without the publication of the mesa-level evidence immediate after the opposition confirmed it had only collected a minority of *actas*. These actions are consistent with a shift from ordinary electoral control to the management of an informational crisis. The regime did not merely need to change the result; it needed to prevent the underlying evidence from becoming public before it could coordinate institutional acquiescence around an electoral fraud.

The broader contribution of the paper is to show that authoritarian election fraud should be studied not only as an ex-post discrepancy between votes cast and results announced, but also as a real-time strategic response to asymmetric information. Elections in authoritarian regimes generate information before they generate official outcomes. When that information is asymmetric, the timing of access can shape the incumbent’s response to impending defeat.

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Appendix

A.1 Extended Model Analysis

We solve the game by backward induction, comparing the symmetric-information benchmark $\bar{I}$ to the asymmetric-information environment $\underline{I}$.

A.1.1 Opposition behavior under symmetric information

Under symmetric information, the Opposition observes whether the Regime has won legitimately or has lost and attempted fraud.

If the Regime wins legitimately, the Opposition chooses between boldness and timidity with payoffs

$$U_O(B \mid W, \bar{I}) = -J, \quad U_O(T \mid W, \bar{I}) = 0.$$

Since $J > 0$, the Opposition chooses T after a legitimate Regime victory.

If the Regime loses and attempts fraud, the Opposition knows that fraud is occurring. Its payoff from boldness is

$$U_O(B \mid F, \bar{I}) = \underline{\phi}(-J) + (1 - \underline{\phi})V_O, \quad (3)$$

while its payoff from timidity is

$$U_O(T \mid F, \bar{I}) = \bar{\phi}(0) + (1 - \bar{\phi})V_O. \quad (4)$$

Boldness is optimal if

$$\begin{aligned} U_O(B \mid F, \bar{I}) &\geq U_O(T \mid F, \bar{I}) \\ V_O(\bar{\phi} - \underline{\phi}) - J\underline{\phi} &\geq 0. \end{aligned} \quad (5)$$

Define

$$D_O \equiv V_O(\bar{\phi} - \underline{\phi}) - J\underline{\phi}. \quad (6)$$

The term D_O is the net value of boldness when the Opposition knows that fraud is occurring. It is increasing in the amount by which boldness lowers the probability of successful fraud, $\bar{\phi} - \underline{\phi}$, and decreasing in the jail cost J and the probability $\underline{\phi}$ that fraud succeeds despite boldness.

Assumption 1 (Boldness against known fraud).

$$D_O = V_O(\bar{\phi} - \underline{\phi}) - J\underline{\phi} > 0. \quad (7)$$

Proposition 1 (Opposition response under symmetric information). *Under Assumption 1, the Opposition acts timidly after a legitimate Regime victory and boldly after a Regime loss followed by fraud.*

Proof. After a legitimate Regime victory, $U_O(T \mid W, \bar{I}) = 0 > -J = U_O(B \mid W, \bar{I})$. After fraud, Assumption 1 implies $U_O(B \mid F, \bar{I}) - U_O(T \mid F, \bar{I}) = D_O > 0$. Therefore, the Opposition chooses T after W and B after F . $\square$

A.1.2 Opposition behavior under asymmetric information

Under asymmetric information, an official Regime victory claim is ambiguous at the moment when the Opposition must decide how to respond. The Regime may have won legitimately, or it may have lost and chosen fraud. The Opposition's expected payoff from boldness at the information set is

$$U_O(B \mid \underline{I}) = \theta(-J) + (1 - \theta) [\underline{\phi}(-J) + (1 - \underline{\phi})V_O]. \quad (8)$$

The expected payoff from timidity is

$$U_O(T \mid \underline{I}) = \theta(0) + (1 - \theta) [\bar{\phi}(0) + (1 - \bar{\phi})V_O]. \quad (9)$$

Therefore, timidity is optimal if

$$\begin{aligned} U_O(T \mid \underline{I}) - U_O(B \mid \underline{I}) &= \theta J - (1 - \theta)D_O \\ &\geq 0. \end{aligned} \quad (10)$$

Equivalently, when $D_O > 0$, timidity is optimal if

$$\theta \geq \frac{D_O}{J + D_O}. \quad (11)$$

Assumption 2 (Timidity under asymmetric information).

$$\theta J - (1 - \theta)D_O \geq 0. \quad (12)$$

Proposition 2 (Opposition response under asymmetric information). *Under Assumption 2, the Opposition acts timidly at the official-victory information set under asymmetric information.*

Proof. By equation (10), $U_O(T \mid \underline{I}) - U_O(B \mid \underline{I}) = \theta J - (1 - \theta)D_O$. Under Assumption 2, this expression is nonnegative. Therefore, T is optimal at the information set. $\square$

Remark 1 (The mechanism). Assumptions 1 and 2 can both hold. The Opposition may be willing to act boldly when it knows fraud is occurring, yet act timidly when it is unsure whether a Regime victory claim is legitimate. The reason is that asymmetric information adds a new expected cost: the Opposition may act boldly in a world where the Regime actually won, in which case boldness only produces repression.

A.1.3 The Regime's decision after a loss

Now consider the Regime's choice after a legitimate loss. Concession gives the Regime payoff zero. Fraud gives an expected payoff that depends on whether the Opposition is bold or timid.

If the Opposition is bold, the Regime's expected payoff from fraud is

$$B_R^B \equiv \underline{\phi} \tilde{u}_R - (1 - \underline{\phi}) P_R. \quad (13)$$

If the Opposition is timid, the Regime's expected payoff from fraud is

$$B_R^T \equiv \bar{\phi} \tilde{u}_R - (1 - \bar{\phi}) P_R. \quad (14)$$

Because $\bar{\phi} > \underline{\phi}$, we have

$$B_R^T - B_R^B = (\bar{\phi} - \underline{\phi})(\tilde{u}_R + P_R) > 0. \quad (15)$$

Thus, fraud is strictly more attractive for the Regime when the Opposition is timid than when it is bold.

Proposition 3 (Information asymmetry raises the value of fraud). *Under Assumptions 1 and 2, the Regime faces a higher expected payoff from fraud under asymmetric information than under symmetric information. Specifically, after a loss, the fraud payoff is B_R^B under $\bar{I}$ and B_R^T under $\underline{I}$, with $B_R^T > B_R^B$.*

Proof. By Proposition 1, the Regime faces a bold Opposition after fraud under symmetric information, yielding payoff B_R^B . By Proposition 2, the Regime faces a timid Opposition at the information set under asymmetric information, yielding payoff B_R^T . Equation (15) shows that $B_R^T > B_R^B$. $\square$

The Regime chooses fraud after losing whenever the expected payoff from fraud exceeds

the payoff from concession. Therefore,

$$F \text{ is chosen under } \bar{I} \iff B_R^B \geq 0 \iff \underline{\phi} \geq \frac{P_R}{\tilde{u}_R + P_R}, \quad (16)$$

$$F \text{ is chosen under } \underline{I} \iff B_R^T \geq 0 \iff \bar{\phi} \geq \frac{P_R}{\tilde{u}_R + P_R}. \quad (17)$$

A particularly useful case is the one in which fraud is unattractive against a bold Opposition but attractive against a timid one:

$$B_R^B < 0 < B_R^T. \quad (18)$$

Equivalently,

$$\underline{\phi} < \frac{P_R}{\tilde{u}_R + P_R} < \bar{\phi}. \quad (19)$$

In this case, the Regime concedes after losing under symmetric information but attempts fraud after losing under asymmetric information.

A.1.4 The Regime's ex ante participation decision

The Regime allows the election if the expected payoff from allowing it is at least as large as the payoff from staying out, $\bar{u}_R$.

Let

$$G_B \equiv \max\{0, B_R^B\}, \quad G_T \equiv \max\{0, B_R^T\}. \quad (20)$$

Here G_B is the value of the Regime's best response after losing when it expects a bold Opposition, and G_T is the value of its best response after losing when it expects a timid Opposition.

Under symmetric information, the Regime's expected payoff from allowing the election is

$$\Pi_R(A \mid \bar{I}) = \theta V_R + (1 - \theta)G_B. \quad (21)$$

Under asymmetric information, the expected payoff is

$$\Pi_R(A \mid \underline{I}) = \theta V_R + (1 - \theta)G_T. \quad (22)$$

Since $B_R^T > B_R^B$, it follows that $G_T \geq G_B$. Therefore,

$$\Pi_R(A \mid \underline{I}) - \Pi_R(A \mid \bar{I}) = (1 - \theta)(G_T - G_B) \geq 0. \quad (23)$$

The inequality is strict whenever $\theta < 1$ and $G_T > G_B$.

Proposition 4 (Information asymmetry raises the expected value of allowing the election). *Under Assumptions 1 and 2, the Regime's expected payoff from allowing the election is weakly higher under asymmetric information than under symmetric information. It is strictly higher whenever there is a positive probability of a legitimate Regime loss and the timid Opposition response increases the value of the Regime's loss-state option.*

Proof. The result follows directly from equation (23). Since $\theta < 1$ and $G_T > G_B$ imply $(1 - \theta)(G_T - G_B) > 0$, the increase is strict under those conditions. $\square$

The participation threshold can also be written explicitly. For $k \in \{B, T\}$, define

$$\tau_k \equiv \max \left\{ 0, \frac{\bar{u}_R - G_k}{V_R - G_k} \right\}. \quad (24)$$

Because $V_R > \tilde{u}_R$ and $G_k \leq \tilde{u}_R$, the denominator is positive. The Regime allows the election under information regime k whenever

$$\theta \geq \tau_k. \quad (25)$$

Since $G_T \geq G_B$, the asymmetric-information threshold is weakly lower:

$$\tau_T \leq \tau_B. \quad (26)$$

Thus, information asymmetry expands the range of electoral prospects for which allowing the election is rational.

Corollary 1 (Information asymmetry can be decisive). *There exist parameter values such that*

$$\Pi_R(A \mid \bar{I}) < \bar{u}_R \leq \Pi_R(A \mid \underline{I}). \quad (27)$$

For these parameter values, the Regime would stay out under symmetric information but allows the election under asymmetric information.

Proof. Choose parameters such that $G_T > G_B$, which is possible by Proposition 3. Then $\tau_T < \tau_B$ for an open set of parameters. For any $\theta \in [\tau_T, \tau_B)$, the Regime's expected payoff from allowing the election is at least $\bar{u}_R$ under asymmetric information but below $\bar{u}_R$ under symmetric information. $\square$

Corollary 2 (A safe-election condition). *If*

$$B_R^T \geq \bar{u}_R, \quad (28)$$

then allowing the election weakly dominates staying out for every $\theta \in (0, 1)$ under asymmetric information. Equivalently, this condition is

$$\bar{\phi} \geq \frac{P_R + \bar{u}_R}{\tilde{u}_R + P_R}. \quad (29)$$

Proof. If $B_R^T \geq \bar{u}_R$, then $G_T \geq \bar{u}_R$. From (22),

$$\Pi_R(A \mid \underline{I}) = \theta V_R + (1 - \theta)G_T \geq \theta V_R + (1 - \theta)\bar{u}_R.$$

Since $V_R > \bar{u}_R$, the right-hand side is weakly greater than $\bar{u}_R$ for all $\theta \in (0, 1)$ and strictly greater for all $\theta > 0$. Rearranging $B_R^T \geq \bar{u}_R$ gives $\bar{\phi}\tilde{u}_R - (1 - \bar{\phi})P_R \geq \bar{u}_R$, or $\bar{\phi} \geq (P_R + \bar{u}_R)/(\tilde{u}_R + P_R)$. $\square$

Table A.1: Terminal Payoffs

Scenario	Regime payoff	Opposition payoff
No election / stay out	$\bar{u}_R$	0
Regime wins legitimately, Opposition bold	V_R	$-J$
Regime wins legitimately, Opposition timid	V_R	0
Regime loses and concedes	0	V_O
Fraud succeeds, Opposition bold	$\tilde{u}_R$	$-J$
Fraud is defeated, Opposition bold	$-P_R$	V_O
Fraud succeeds, Opposition timid	$\tilde{u}_R$	0
Fraud is defeated, Opposition timid	$-P_R$	V_O