A Model of Autocratic Succession

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Abstract

We provide a model of autocratic succession. We show that without independent third-party enforcement, rent-seeking intermediaries endogenously capture information channels, forcing even loyal heirs into preemptive rebellion. To prevent this security dilemma, the autocrat's rational second-best response is extreme information obfuscation. While obfuscation eliminates short-term succession violence, it destroys the market for political futures, selecting for docile, politically isolated executives. Our model provides a formal micro-foundation for the executive human capital deficit underlying the Great Divergence.

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Abstract

We provide a model of autocratic succession. We show that without independent third-party enforcement, rent-seeking intermediaries endogenously capture information channels, forcing even loyal heirs into preemptive rebellion. To prevent this security dilemma, the autocrat's rational second-best response is extreme information obfuscation. While obfuscation eliminates short-term succession violence, it destroys the market for political futures, selecting for docile, politically isolated executives. Our model provides a formal micro-foundation for the executive human capital deficit underlying the Great Divergence.

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1. Introduction

Why do autocratic successions systematically oscillate between violent conflict and institutional stagnation? Imperial China presents a striking institutional puzzle. Despite possessing a highly rationalized bureaucracy and an enduring administrative apparatus, the imperial state repeatedly failed to institutionalize a stable, non-violent succession mechanism. While Western Europe transitioned from medieval dynastic struggles toward rule-bound successions anchored by parliaments and the Church, the Chinese system vacillated between two institutional extremes: the violent physical collapse of "Open Succession" (exemplified by the Han Dynasty's Witchcraft Incident in 91 BC) and the extreme opacity of the "Secret Reserve" system (perfected by the Qing Dynasty in the eighteenth century), which eliminated immediate violence at the cost of long-term adverse selection.

Standard historical accounts attribute these succession crises to idiosyncratic factors, such as the psychological decay of aging emperors or court intrigue. These narrative explanations capture high-politics drama, but they fail to explain the structural, mathematical regularity of these breakdowns across millennia. In political economy, literature following North and Weingast (1989), Greif (1994, 2006), and Acemoglu and Robinson (2006) identifies the absence of credible commitment as the root of East-West institutional divergence. Studies on political survival (Bueno de Mesquita et al., 2003), autocratic succession (Tullock, 1987; Kurrild-Klitgaard, 2000), and authoritarian rule (Myerson, 2008; Svolik, 2012; Guriev and Treisman, 2019) highlight the commitment problems inherent in autocratic power sharing. Yet existing frameworks treat the breakdown of succession rules as a black box. They overlook the endogenous role of information transmission, failing to explain how power concentration, information asymmetry, and the self-interested agency of bureaucratic intermediaries conjointly force rational actors into a sub-optimal equilibrium.

We address this gap by modeling monarchical succession as a dynamic signaling game of incomplete information without a third-party enforcer. The stability of the ruler-heir

relationship depends on two parameters: Rule Independence (α), representing exogenous third-party constraints, and Information Transparency (β), representing signal accuracy regarding heir loyalty. Our formal framework yields a stark economic intuition: information opacity ($\beta \to 0$) is not an idiosyncratic error by the autocrat, but the systemic price paid to preserve absolutist rents when independent third-party enforcement ($\alpha \to 0$) is structurally prohibited.

Our model demonstrates that when the ruler refuses to share power with an independent adjudicator ($\alpha \to 0$), the penalty for intermediaries sending false threat signals becomes structurally asymmetric. Anticipating that an extremely risk-averse ruler will purge any suspected heir to ensure biological survival, competing intelligence agencies and bureaucratic intermediaries face a classic Prisoner's Dilemma. Their strictly dominant strategy is to collude and universally signal a threat, creating a pooling equilibrium that captures the information channel. Facing an inevitable purge due to this informational noise, the heir's unique rational response is preemptive rebellion. Thus, extreme centralization mathematically breeds extreme violent instability. We formalize autocratic information distortion not as a psychological trait or cultural outcome, but as the subgame-perfect equilibrium of an information-constrained environment, where the ruler acts as a rational agent minimizing the risk of intermediary capture.

To empirically evaluate the observable implications of this model, we employ Comparative and Historical Institutional Analysis (CHIA) integrated with process tracing across three distinct institutional environments. First, we examine the Han Dynasty's Witchcraft Incident, demonstrating how the physical isolation of the emperor enabled intermediaries to monopolize the information channel ($\beta \to 0$), inexorably driving a structurally loyal crown prince to defensive rebellion. Second, we analyze the Qing Dynasty's Secret Reserve system, revealing that unable to increase α, the state actively forced β to zero by hiding the heir's identity. To avoid being perceived as a threat, princes minimized observable administrative capacity. We document this empirically by introducing a novel proxy—pre-accession admin-

istrative tenure and cabinet network overlap—showing a structural collapse in heirs' political capital. Finally, we introduce Western Europe as a comparative control group, illustrating how independent organizations such as the Church and early parliaments increased Rule Independence ($\alpha \to 1$). Strict primogeniture emerged endogenously as an institutional commitment device required by third-party enforcers, insulating the system against informational shocks and enabling the intergenerational accumulation of state capacity.

This study makes three primary contributions to political economy and economic history. First, we theoretically endogenize information capture in autocratic regimes. Moving beyond traditional historiography that attributes succession crises to imperial paranoia, as well as political economy literature that treats information friction as exogenous (North and Weingast, 1989; Svolik, 2012), we prove that information distortion by rent-seeking intermediaries is a subgame-perfect equilibrium dictated by absolute power ($\alpha \to 0$). We provide a formal micro-mechanism explaining why autocracies endogenously generate informational echo chambers and violent succession traps.

Second, we introduce an executive-level political capital channel to the Great Divergence literature (Pomeranz, 2000; Acemoglu, Johnson, and Robinson, 2005). Existing institutional accounts focus predominantly on property rights, financial markets, or state capacity to explain China's relative stagnation. We highlight an equally fatal divergence in executive human capital. Challenging the optimistic view of the "Secret Reserve" as a successful evolutionary modernization, we show that driving information transparency to zero ($\beta \to 0$) destroyed the "market for political futures." The Secret Reserve endogenously stripped late imperial heirs of their principal-agent networks, creating a devastating "scissors effect" that paralyzed executive statecraft at the exact moment of nineteenth-century geopolitical crises.

Third, we provide a formal micro-foundation for macro-historical cyclical stagnation. In Chinese historiography, Jin and Liu (1984) conceptualized the imperial state as an "Ultra-stable Structure" that constantly reconstructed itself without structural breakthrough. By integrating game theory with comparative process tracing, we map abstract equilibrium

conditions onto testable historical footprints, explaining how the imperial apex repeatedly triggered its own resets, oscillating between violent physical collapse and paralyzing institutional involution.

The remainder of this paper is organized as follows. Section II develops the formal game-theoretic model of monarchical succession under incomplete information, deriving the conditions under which information capture and obfuscation emerge as subgame-perfect equilibria. Section III utilizes process tracing to test the model's predictions against the Han Dynasty's Witchcraft Incident, illustrating how information monopoly by intermediaries drives defensive rebellion. Section IV analyzes the Qing Dynasty's Secret Reserve system, quantifying the structural collapse of heirs' pre-accession political capital under extreme information obfuscation. Section V provides a comparative analysis of Western Europe, demonstrating how exogenous third-party enforcement enabled rule-bound succession and intergenerational state capacity accumulation. Section VI concludes with theoretical implications for modern authoritarian regimes.

2. THE MODEL

Consider an autocrat (R), a potential Heir (H), and a Bureaucratic Intermediary (M) who controls the flow of intelligence to the throne. The Heir is either loyal ($\theta = L$) or ambitious ($\theta = A$). The Ruler does not observe θ; he relies entirely on signals $s \in \{L, A\}$ sent by M.

The sequence of play is straightforward. Nature draws $\theta \in \{L, A\}$ with prior probability $\Pr(\theta = L) = p$. The Intermediary observes θ and sends signal s. Observing s, the Ruler updates his posterior belief $\mu(s) = \Pr(\theta = A \mid s)$ and decides whether to Abide (A_R) or Purge (P_R). Anticipating or observing R's choice, H decides whether to Wait (W) or Rebel (B).

The environment is defined by Rule Independence ($\alpha \in [0, 1]$), the probability that an independent third party verifies intelligence and enforces rules. In an absolute autocracy ($\alpha \to 0$), no such adjudicator exists.

2.1. The Autocrat's Decision

The Ruler receives V_R from a peaceful succession. If he abides (A_R) while the heir is ambitious ($\theta = A$), he suffers dethronement and death, incurring a loss $-L_R$. Preemptively purging (P_R) secures biological survival but costs C_P in administrative disruption.

Because being overthrown is infinitely worse than executing an innocent relative ($L_R \gg C_P$), the Ruler purges whenever his belief of a threat exceeds a threshold:

$$\mu(s) > \mu^* = \frac{C_P}{V_R + L_R} \approx 0 \tag{1}$$

Because $L_R \to \infty$, the tolerance threshold μ^* vanishes. The autocrat tolerates zero risk.

Boundary Condition: If the Heir commands independent military force, the cost of purging him (C_P) approaches the cost of a coup (L_R). As $C_P \to L_R$, the threshold μ^* rises, forcing the Ruler to verify signals rather than automatically purge. To keep $\mu^* \to 0$ and retain discretionary survival, absolute states must structurally keep $C_P \ll L_R$. This explains why autocratic regimes systematically disarm their princes.

2.2. Endogenous Information Capture

The Intermediary M is a rent-seeker. Reporting a plot ($s = A$) triggers a purge, yielding a bureaucratic reward and asset confiscation worth $B > 0$. If M frames a loyal heir ($s = A$ when $\theta = L$) and perjury is discovered, M faces execution, losing $F > 0$.

With independent adjudication (α), M's expected payoff from a false alarm is $(1-\alpha)B - \alpha F$.

Proposition 1. *When $\alpha < \frac{B}{B+F}$, sending a threat signal ($s = A$) is M's strictly dominant strategy regardless of the Heir's true type. The game collapses into a pooling equilibrium.*

The logic is simple. Without an independent court ($\alpha \to 0$), the risk of caught perjury vanishes ($\alpha F \to 0$). Because the rent from eliminating a future rival (B) remains positive,

M reports a threat every time.

Signal $s = A$ becomes completely uninformative. The Ruler's posterior belief equals his prior ($\mu = 1 - p$). Because any non-zero prior exceeds the vanishing tolerance threshold ($1 - p > \mu^* \approx 0$), the Ruler invariably purges.

2.3. Defensive Rebellion

Now consider the Heir. Waiting (W) through a purge yields physical extermination ($-V_C$). Rebelling (B) costs K, yielding throne value V_H with probability π and death ($-V_C$) with probability $1 - \pi$.

Proposition 2. *When $\alpha \to 0$, a structurally loyal Heir ($\theta = L$) launches a preemptive rebellion whenever $\pi(V_H + V_C) > K$.*

The loyal heir is trapped by a security dilemma. Knowing he will be framed by M (Proposition 1) and purged by R, passive waiting guarantees death ($-V_C \to -\infty$). Rebellion becomes his unique best response despite high costs (K) and low odds (π). He rebels not out of ambition, but out of self-defense against informational noise.

2.4. Multiple Intermediaries and Collusion

Can the Ruler solve this by hiring competing secret police agencies? No. Suppose the Ruler deploys two agencies, M_1 and M_2. Punishment for conflicting signals is asymmetric under $\alpha \to 0$. If M_1 reports loyalty ($s_1 = L$) while M_2 reports a plot ($s_2 = A$), the risk-averse Ruler purges the Heir based on s_2. M_1 is executed as an accomplice.

To avoid this outcome, competing agencies face a Prisoner's Dilemma. Threat signaling ($s_i = A$) is strictly dominant for all $i \in N$. Multiplying secret police without independent courts generates an echo chamber rather than an information channel.

3. INSTITUTIONAL BACKGROUND: THE MECHANICS OF ABSOLUTE AUTOCRACY

Unlike early modern Europe, where polycentric institutions—parliaments, autonomous nobility, and the Church—provided third-party rule enforcement ($\alpha > 0$), Imperial China operated under absolute power concentration ($\alpha \to 0$). Imperial China provides a canonical institutional laboratory for analyzing autocratic commitment precisely because it represents the limiting case where independent third-party enforcement is structurally absent.

3.1. The Stylized Fact: Systemic Succession Failure

Across two millennia of dynastic cycles, the inability to institutionalize third-party enforced succession rules resulted in pervasive succession instability. Table 1 catalogs power transfer outcomes across major unified dynasties. To systematically construct these stylized facts, we establish a standardized coding protocol for every imperial power transition. A power transition is defined as an "Abnormal/Violent Succession" if it satisfies any of three verifiable historical criteria: physical violence or execution targeting the incumbent or designated heir, armed mobilization within the capital prior to imperial demise, or irregular deposition forced by inner-court factions such as eunuchs, consorts, or regents. Full biographical source citations, individual emperor coding rosters, and formal econometric specifications—including Firth's penalized logistic regressions adjusting for dynastic clustering—are reported in Appendix B.

The empirical pattern is stark: prior to the Qing, one-third to one-half of all imperial successions collapsed into violence or institutional irregularity. In the Tang Dynasty, abnormal successions exceeded 50%, driven by military coups at the Xuanwu Gate and assassinations by inner-court eunuchs.

This evidence refutes the hypothesis that succession was regulated by moral Confucian norms or informal institutional conventions. Instead, it confirms our theoretical baseline: an

Table 1: Disaggregated Rates of Abnormal Succession Across Major Dynasties

Dynasty	**Total Emperors**	**Total Abnormal**	**Overall Abnormal**	**Inner-Court / Info Distortion**	**External / Warlord**
Han	24	11	45.8%	**8 (72.7%)**	3 (27.3%)
Tang	21	11	52.4%	**9 (81.8%)**	2 (18.2%)
Ming	16	5	31.2%	**4 (80.0%)**	1 (20.0%)
Qing Era					
Open (1644–1722)	2	1	50.0%	**1 (100%)**	0 (0%)
Secret (1723–1911)	7	0	0.0%	**0 (0%)**	0 (0%)

Notes: "Inner-Court / Info Distortion Driven" identifies successions derailed by internal factional framing, eunuch or consort manipulation, or emperor-heir paranoia (corresponding to $\beta \to 0$ information capture). "External" denotes exogenous military conquest by provincial warlords.

absolutist regime lacking third-party enforcement ($\alpha \to 0$) is trapped in a structural security dilemma.

The bottom panel of Table 1 highlights the institutional break under the Qing Dynasty's "Secret Reserve" system. By driving Information Transparency to zero ($\beta \to 0$), the Qing state eliminated violent succession entirely (0% abnormal rate over nearly two centuries). However, as our theoretical framework demonstrates, eliminating physical violence through extreme opacity destroyed the market for political futures, systematically stripping heirs of executive capital.

4. THE HAN DYNASTY: OPEN SUCCESSION AND INFORMATION COLLAPSE

We evaluate our formal model through a process tracing analysis of the Han Dynasty, focusing on the Witchcraft Incident (*Wugu zhi huo*) of 91 BC during the reign of Emperor Wu. This case provides an empirical demonstration of how an absolute autocracy ($\alpha \to 0$), combined with an exogenous shock to information transparency ($\beta \to 0$), forces a structurally loyal heir into defensive rebellion.

Following historical institutional analysis (Greif, 2006; Brandt, Ma, and Rawski, 2014), we utilize primary source records to verify the micro-mechanisms of our model—specifically,

players' beliefs, signal transmission, and expected utilities. Systematic macro-level regularity across dynasties is subsequently established in Section IV.

4.1. The Baseline: Open Succession without Third-Party Enforcement

Under the Han system of "Open Succession," Crown Prince Liu Ju was publicly designated and allocated administrative resources for decades. Public designation resolved rule determinacy but created a visible target for bureaucratic rent-seeking.

Because Emperor Wu held unconstrained autocratic power ($\alpha \to 0$), no independent council or judicial body existed to adjudicate disputes between the Emperor and the Crown Prince. In our formal framework, the absence of third-party enforcement meant the Ruler's posterior belief $\mu(s)$ depended entirely on information transmitted by bureaucratic intermediaries (M), rather than on verifiable judicial evidence.

4.2. Exogenous Shock: Physical Isolation and Information Capture

For thirty years, direct communication between the Emperor and the Crown Prince maintained high signal transparency (β). When Emperor Wu fell ill and relocated to the secluded Ganquan Palace outside the capital, physical distance generated an exogenous shock that drove $\beta \to 0$.

Spatial isolation forced reliance on secret police chief Jiang Chong (M). Having previously alienated the Crown Prince, Jiang Chong anticipated execution upon the Prince's accession. Facing an asymmetric payoff—death if the heir ascends versus survival and rents ($B > 0$) if the heir is eliminated—Jiang Chong's strictly dominant strategy was to initiate the pooling equilibrium by signaling a threat ($s = A$).

4.3. Signal Distortion and Preemptive Rebellion

Jiang Chong fabricated treason charges against the Crown Prince using witchcraft accusations. Isolated at Ganquan Palace without third-party verification ($\alpha \to 0$), the Emperor's

extreme loss aversion ($L_R \to \infty$) drove his tolerance threshold to zero ($\mu^* \to 0$).

When Jiang Chong moved to purge the Prince's faction, the Prince was unable to establish direct contact with the Emperor. Facing an imminent purge ($-V_C$), the Prince evaluated the expected utility of waiting (W) versus rebelling (B).

Process tracing provides direct evidence of the heir's expected utility calculations. When the Prince's advisor, Shi De, evaluated the situation, he stated:

> "The Emperor is at Ganquan Palace, and messengers sent by the Empress and Crown Prince have been blocked. We cannot verify whether His Majesty is alive. Vile officials are executing people at will…Do you not recall the fate of Crown Prince Fusu of the Qin Dynasty?" (*Han Shu*, Vol. 63)

The blocked messengers confirm the collapse of transparency ($\beta \to 0$). The reference to Prince Fusu—who obediently committed suicide following a forged decree—demonstrates the heir's rational calculation that waiting under unverified threat signals yields total destruction ($-V_C$).

Consequently, even though Prince Liu Ju was structurally loyal ($\theta = L$), choosing preemptive rebellion (B) was his unique rational best response. The Prince forged an imperial edict, executed Jiang Chong, and mobilized his guards.

4.4. Equilibrium Confirmation

The Prince's defensive mobilization provided self-fulfilling confirmation to the isolated Emperor. Observing unauthorized troop deployment, the Emperor updated his belief to $\mu = 1$, confirming the intermediary's threat signal ($s = A$). The Emperor deployed the regular army to suppress the Prince's forces, resulting in capital urban warfare and the Prince's death.

The Witchcraft Incident demonstrates structural failure rather than narrative imperial paranoia. When a regime prohibits independent third-party enforcement ($\alpha \to 0$), information channels are endogenously captured by intermediaries ($\beta \to 0$), forcing rational actors into the preemptive violence the system was designed to prevent.

5. THE QING DYNASTY: INFORMATION OBFUSCATION AND ADVERSE SELECTION

If the Han Dynasty illustrates the violent collapse of open succession, the Qing Dynasty demonstrates the paradox of the autocrat's second-best solution. Facing the same $\alpha \to 0$ constraint, the Qing state eradicated short-term succession violence, but did so by endogenously generating a severe executive political capital deficit.

5.1. The Secret Reserve as a Second-Best Solution

During the late reign of Emperor Kangxi (early 18th century), open succession generated intense bureaucratic factionalism and intermediary rent-seeking, culminating in the succession crisis among his sons (the "Nine-Lord Contention").

To eliminate this security dilemma without conceding absolute power to a third-party enforcer ($\alpha \to 0$), Emperor Yongzheng established the "Secret Reserve" system in 1723. The emperor wrote the designated heir's name on an edict, sealed it in a box, and placed it behind a high plaque in the Qianqing Palace, to be opened only upon his death.

Emperor Yongzheng framed this mechanism as an explicit institutional response to intermediary rent-seeking. In his foundational edict, he diagnosed the failure of open succession:

> "If a Crown Prince is established today, men of narrow vision will view him as a distinct faction. They will flock to him, seeking future favor, forming cliques and engaging in relentless factional strife... Therefore, I will not publicly designate an Heir, but will seal his name and hide it." (*Qing Shilu*, Vol. 11)

Yongzheng's logic maps onto Proposition 1. Public designation provides a target for intermediaries to form factions and capture information channels for political rents (B).

In our formal framework, the Secret Reserve enforces extreme information obfuscation ($\beta \to 0$). Concealing the heir's identity removes the focal point of the signaling game, preventing bureaucratic factions from investing in candidates or manipulating intelligence.

To eliminate pooling and deter intermediaries from framing loyal heirs, the institutional design must satisfy:

$$\alpha \geq \frac{\beta \bar{B}}{\beta \bar{B} + F} \tag{2}$$

When the autocrat refuses independent judicial constraints ($\alpha \to 0$), independent punishment cannot deter perjury. Mathematically, the unique way to satisfy this inequality and eliminate rent-seeking (B) is to drive information transparency to zero ($\beta \to 0$). Extreme information obfuscation was an endogenous institutional design dictated by the $\alpha \to 0$ environment.

5.2. Competence-Loyalty Trade-offs and Orthogonal Signaling

While the Secret Reserve eliminated open rebellion, it altered behavioral incentives for potential heirs by forcing the emperor to monitor all princes simultaneously. This structure formalizes a classic competence-loyalty trade-off (Egorov and Sonin, 2011) under extreme risk aversion ($L_R \to \infty$). Because the autocrat prioritizes internal survival over administrative efficiency, displaying administrative capability or coalition-building ($C_{\text{political}} > 0$) signaled a threat ($s = A$). To avoid purges, the strictly dominant strategy for princes was to minimize observable statecraft capacity, cultivating personas focused on moral study while avoiding state ministries and the military.

Resolving the information structure under the Secret Reserve requires partitioning the signal space. The Qing state strictly enforced $\beta_{\text{macro}} \to 0$ (the opacity of the heir's identity to the outer bureaucracy and military), which successfully eliminated the target for intermediary rent-seeking ($B \to 0$). However, information transparency within the imperial household (β_{micro}) remained positive ($\beta_{\text{micro}} > 0$). The Secret Reserve did not create an absolute information void; rather, it structurally shifted the monitoring locus from the outer court to the inner household. Confined to the Upper Study under direct imperial oversight, princes were forced to pool on zero observable political capacity ($C_{\text{political}} \to 0$, where $\beta_{\text{macro}} \to 0$), while competing exclusively along an orthogonal dimension of moral docility (e^*, where $\beta_{\text{micro}} > 0$).

The tragedy of the Secret Reserve was not a total lack of information, but a severe distortion of the signal space from productive statecraft to sycophantic docility.

To select an heir without relying on a random lottery, the autocrat resolves this selection problem via **orthogonal signaling**—evaluating candidates on dimensions independent of political threat. Because internal usurpation carries a catastrophic penalty ($-L_R$), the ruler abandons evaluating political coalition-building ($C_{\text{political}}$) and selects based on moral submission and compartmentalized cognitive testing.

First, filial piety and strict Confucian ritual adherence served as proxies for loyalty ($\theta = L$). Demonstrating absolute submission minimized the perceived risk to the incumbent's survival, triggering intense competition in moral signaling. Second, to test cognitive capacity without permitting coalition-building, emperors utilized theoretical testing within the Upper Study—evaluating literary memorization and hypothetical policy essays rather than actual administrative or military command.

This mechanism accounts for late Qing successions, such as the selection of Emperor Xianfeng over his brother, Prince Gong. During a royal hunt testing leadership capacity, Prince Gong displayed martial skill, whereas Xianfeng deliberately harvested nothing, weeping and stating he could not bear to kill animals in spring. Emperor Daoguang interpreted Xianfeng's behavior not as weakness, but as a signal of benevolent docility—an orthogonal signal (e^*) of absolute loyalty evaluated under $\beta_{\text{micro}} > 0$.

By optimizing for survival and relying on orthogonal signals under $\beta_{\text{micro}} > 0$, the Secret Reserve solved the dictator's dilemma. However, by partitioning the signal space to enforce $\beta_{\text{macro}} \to 0$, the system systematically selected for docile, politically isolated executives.

5.3. Quantifying the Collapse of Political Coalitions

In an imperial state, executive capacity depends on the accumulation of **political capital**—the ability to forge a tested ruling coalition. Under the Secret Reserve, concealing the heir's identity prevented bureaucrats from investing in specific candidates and prevented princes

from promising future patronage, collapsing the market for political futures.

To quantify this mechanism, we introduce two complementary metrics: **Pre-Accession Administrative Tenure** and the **Network Overlap Rate**. We measure network overlap across two distinct institutional tiers during the new emperor's first regnal year. The **Cabinet Overlap Rate** captures the proportion of the apex executive body—the Grand Secretariat under the Ming and the Grand Council under the Qing—who had served on the heir's princely staff or were recommended by him prior to accession. Complementarily, the **Outer Network Overlap Rate** captures the proportion of sub-cabinet vice-ministers of the Six Ministries (*Liubu Shilang*) and provincial governors-general (*Dufu*) possessing pre-existing ties to the heir. Measuring outer bureaucratic networks provides an explicit falsification test: if the collapse in cabinet ties were merely a mechanical artifact of the Qing Grand Council's informal inner-court appointment rules, network overlap within the formal outer-court bureaucracy should remain positive.

Table 2: Pre-Accession Tenure and Quantified Coalition Capacity Across Bureaucratic Tiers

Emperor	Accession Year	Accession Age	Functional Tenure (Yrs)	Cabinet Overlap (Year 1)	Outer Network Overlap (Vice-Min/Governors)
Ming: Open Succession					
Hongxi (Zhu Gaochi)	1424	46	20	62.5% (5/8)	58.3% (7/12)
Xuande (Zhu Zhanji)	1425	26	14	57.1% (4/7)	50.0% (6/12)
Qing: Open Succession					
Yongzheng (Yinzhen)	1722	44	24	**75.0% (3/4)**	**66.7% (8/12)**
Qing: Secret Reserve Era					
Jiaqing (Yongyan)	1796	36	0	**0.0% (0/5)**	**0.0% (0/12)**
Daoguang (Minning)	1820	38	0	**0.0% (0/0)**	**0.0% (0/12)**
Xianfeng (Yizhu)	1850	19	0	**0.0% (0/5)**	**0.0% (0/12)**

Notes: "Cabinet Overlap" measures the proportion of top executive officials in the emperor's first regnal year who had prior institutional ties to the heir (Grand Secretariat for Ming; Grand Council for Qing). To falsify the concern that the 0% Grand Council overlap is an artifact of Qing inner-court administrative rules, "Outer Network Overlap" measures pre-accession network ties among sub-cabinet vice-ministers of the Six Ministries (*Liubu Shilang*) and provincial governors-general (*Dufu*). The universal collapse to 0% across all tiers confirms a systemic political quarantine of late Qing heirs.

Table 2 demonstrates a stark structural break. Under Open Succession across both the Ming and early Qing, heirs accumulated extensive functional tenure (14 to 24 years) and established deep political networks across both the cabinet (57.1%–75.0%) and provincial/ministerial posts (50.0%–66.7%).

Once the Secret Reserve fully matured, political capital accumulation ceased entirely. Despite acceding as mature adults (e.g., Jiaqing at age 36, Daoguang at age 38), late Qing heirs recorded zero years of administrative tenure and a strict 0% overlap rate across *all* bureaucratic tiers. The universal collapse across both inner-court and outer-court networks falsifies the institutional rule artifact hypothesis, confirming that late Qing heirs suffered a total political quarantine and inherited the state apparatus cold.

To address the concern that the 0% overlap in the Grand Council is a mechanical artifact of Qing inner-court rules, we expand our empirical proxy to sub-cabinet executive networks: the Vice-Ministers of the Six Ministries and Provincial Governors-General.

As shown in Table 2, under Open Succession, future emperors cultivated deep political capitals across both the apex cabinet and provincial governorships. Under the mature Secret Reserve, the pre-accession network overlap rate collapses to strictly 0% across ALL bureaucratic tiers. This solidifies our causal identification: late Qing heirs were subject to a universal political quarantine, not merely an inner-court administrative exclusion.

5.4. Robustness and Alternative Hypotheses

We evaluate four alternative explanations for the decline in heirs' political capital.

1. The Consolidation Effect (Demand-Side Shock): One hypothesis suggests that the demand for executive competence declined as the dynasty consolidated peace. However, the mid-nineteenth century presented extreme crises, including the Taiping Rebellion and the Opium Wars. Exogenous demand for statecraft reached its peak, yet administrative quarantine of heirs remained enforced, indicating an endogenous supply constraint rather than a demand reduction.

2. Cultural Assimilation: A sociological explanation posits that Manchu elite assimilation shifted education toward literary studies. However, assimilation does not account for mandatory secrecy. Had literary excellence been the objective, the Qing could have adopted the Ming model of public designation surrounded by scholar-officials. Instead, the Qing

strictly prohibited princes from interacting with Grand Councilors or generals—a structural barrier against intermediary capture.

3. Demographic Constraints: A demographic argument suggests later emperors had fewer adult sons, eliminating competition. While biological failure occurred post-1875, the 1796–1861 period maintained multiple adult candidates. Emperor Daoguang had nine sons, yet institutional rules prohibited all of them from holding administrative office prior to the secret edict's opening.

4. The Rise of Regents and Empress Dowagers: An argument holds that political paralysis stemmed from usurpation by court regents, such as Empress Dowager Cixi. Institutionally, this was a symptom rather than the primary cause. Because the Secret Reserve produced heirs lacking established political networks, premature imperial deaths left structural power vacuums. Power defaulted to inner-court actors with physical proximity to the throne.

5.5. Process Tracing: Fiscal Fragmentation and the Great Divergence

Process tracing from the late Qing illustrates how the structural political capital deficit translated into policy paralysis during geopolitical crises. Upon acceding in 1850 with a 0% network overlap and zero administrative tenure, Emperor Xianfeng inherited the state apparatus cold. Months later, the Taiping Rebellion erupted—a shock demanding unprecedented fiscal and military mobilization.

A ruler with an established coalition (such as Emperor Yongzheng) could deploy trusted principal-agents to execute top-down military reforms and centralize emergency taxation. Lacking a pre-existing vanguard, Xianfeng faced severe principal-agent frictions, failing to coordinate the formal military apparatus (the Eight Banners and Green Standard Army). To contain the existential threat, the imperial center was forced into ad-hoc delegation, surrendering fiscal authority (the *Likin* tax) and military command to regional provincial elites, most notably Zeng Guofan's Xiang Army.

This executive political capital channel complements existing literature on property rights and factor markets (Pomeranz, 2000; Acemoglu, Johnson, and Robinson, 2005) by resolving a fundamental empirical puzzle: why the Qing state, which commanded vast aggregate fiscal-military resources during the High Qing, suffered catastrophic paralysis when confronted by nineteenth-century geopolitical shocks.

The Great Divergence was accelerated not merely by technological backwardness, but by an endogenously manufactured executive bottleneck. Ad-hoc regional delegation contained internal rebellion but fractured central state capacity at a critical historical juncture. When confronted with Western industrial powers, the Qing state failed to mobilize its fiscal-military apparatus efficiently because its executive branch had been structurally stripped of the political networks required to enforce centralized crisis management. The institutional mechanism designed to preserve internal regime survival ($\beta \to 0$) endogenously manufactured the empire's ultimate geopolitical fragmentation.

6. WESTERN EUROPE: POLYCENTRICITY AND RULE DETERMINACY

To evaluate the comparative implications of our formal model, we contrast Imperial China ($\alpha \to 0$) with early modern Western Europe. Western Europe escaped the cycle of succession violence and executive adverse selection through the emergence of polycentric institutional constraints ($\alpha \to 1$).

6.1. Independent Institutional Constraints

Unlike the centralized Chinese state, early modern Western Europe was characterized by fragmented authority. Monarchs shared political power with autonomous institutional actors, including the Catholic Church, feudal nobility, and early parliaments (Stasavage, 2010; Cox, 2017).

These independent organizations functioned as the third-party enforcers formalized in Section II. When disputes arose between the ruler and the heir, or when intermediaries attempted false threat signaling ($s = A$), independent bodies possessed autonomous political, military, and financial capacity to verify intelligence and enforce agreements. Independent verification eliminated the asymmetric penalty structure that drives information capture, dismantling the pooling equilibrium.

6.2. The Endogeneity of Primogeniture

Rather than an exogenous cultural norm, strict primogeniture—the absolute right of the first-born son—was an endogenous commitment device generated under $\alpha \to 1$. In a polycentric environment, allowing monarchs discretionary choice over heirs based on "merit" induced severe rent-seeking. Factions and foreign powers backed competing claimants, generating destructive dynastic wars.

To prevent monarchs from playing elite factions against one another, third-party enforcers enforced a deterministic biological rule. Stripping the monarch of discretionary choice severed the link between political signaling and succession.[1]

6.3. Accumulation of Executive Capacity

Under third-party enforcement and strict primogeniture, European heirs were insulated from the competence-loyalty trade-off. Demonstrating administrative or military competence ($C > 0$) did not signal a threat ($s = A$) because the monarch could not revoke the succession. Consequently, heirs were integrated into governance—commanding armies, administering provinces, and conducting diplomacy. Ascending monarchs possessed established political capital and tested principal-agent networks, facilitating the intergenerational accumulation of state capacity.

[1]European monarchs did not establish high-α environments to resolve succession problems. As fiscal-military accounts demonstrate (Tilly, 1990), monarchs conceded power to parliaments to secure sovereign debt and war revenue. Succession stability and executive capital accumulation were unintended institutional byproducts of fiscal-military bargaining.

Strict primogeniture exposed regimes to biological shocks (e.g., Charles II of Spain). However, polycentric institutions decoupled biological competence from administrative state capacity. Independent parliaments, ministerial cabinets, and bureaucracies maintained state functions despite executive incapacity. In contrast, under Chinese imperial centralization ($\alpha \to 0$), executive paralysis at the apex immediately crippled the state apparatus.

7. CONCLUSION

The failure to institutionalize autocratic succession highlights the structural constraints of absolute power. Modeling succession as a dynamic signaling game without third-party enforcement explains why autocracies systematically oscillate between violent collapse and institutional involution.

Our framework establishes a stark institutional result: information opacity and intermediary capture are endogenous costs incurred to preserve absolute power when third-party enforcement ($\alpha \to 0$) is excluded. In the Han Dynasty, physical isolation enabled intermediaries to capture information channels, driving loyal heirs into defensive rebellion. In response, the Qing Dynasty implemented the Secret Reserve—extreme information obfuscation ($\beta \to 0$) that eliminated short-term violence at the expense of executive political capital.

This analysis provides a novel micro-foundation for the Great Divergence. Nineteenth-century imperial paralysis resulted from a structural scissors effect: an endogenously generated trough in executive political capital intersecting with an exogenously generated peak in geopolitical complexity.

These theoretical results extend to modern authoritarian persistence (Svolik, 2012). Institutionalized autocracies (such as dominant-party regimes) utilize central committees or military councils as partial third-party enforcers ($\alpha > 0$), stabilizing succession and accumulating executive capacity. Conversely, personalistic dictators who dismantle intra-party constraints ($\alpha \to 0$) recreate the imperial security dilemma. Trapped by the mechanisms

modeled here, personalistic regimes rely on information obfuscation and continuous purges, generating executive paralysis and regime fragility.

MATHEMATICAL APPENDIX: PROOFS OF EQUILIBRIA

This appendix provides formal proofs for the dynamic signaling game and equilibrium conditions. We establish a Perfect Bayesian Equilibrium (PBE) comprising players' strategies and the Ruler's posterior belief system $\mu(s)$.

A1. Formal Environment and Belief Structure

The Heir's true type is $\theta \in \{L, A\}$, where L denotes "Loyal" and A denotes "Ambitious." The prior probability is $\Pr(\theta = L) = p \in (0, 1)$. The Intermediary M observes θ perfectly and sends signal $s \in \{L, A\}$. The Ruler R observes s and updates his posterior belief $\mu(s) = \Pr(\theta = A \mid s)$ via Bayes' rule.

The Ruler's expected utility from Abiding (A_R) or Purging (P_R) is given by:

$$\begin{aligned} U_R(A_R \mid \theta = L) &= V_R \\ U_R(A_R \mid \theta = A) &= -L_R \quad (L_R \gg V_R) \\ U_R(P_R \mid \theta) &= V_R - C_P \quad \forall \theta \end{aligned}$$

The Ruler chooses Abide (A_R) if and only if:

$$(1 - \mu(s))V_R + \mu(s)(-L_R) \geq V_R - C_P \iff \mu(s) \leq \mu^* \equiv \frac{C_P}{V_R + L_R} \tag{3}$$

Because $L_R \to \infty$, the tolerance threshold μ^* approaches zero. The Ruler executes P_R whenever $\mu(s) > \mu^*$.

A2. Proof of Proposition 1: Endogenous Information Capture

We evaluate the Incentive Compatibility (IC) constraints for Intermediary M. If M triggers a purge, he receives bureaucratic rent $B > 0$. If M sends a false threat signal ($s = A$ when $\theta = L$) and perjury is discovered, M incurs execution penalty $F > 0$. Perjury discovery

occurs with probability $\alpha \in [0, 1]$ (Rule Independence).

Consider type $\theta = L$. Reporting truthfully ($s = L$) yields payoff 0. Sending a false signal ($s = A$) yields expected utility:

$$\mathbb{E}[U_M(s = A \mid \theta = L)] = (1 - \alpha)B - \alpha F \tag{4}$$

A separating equilibrium requires $0 \geq (1 - \alpha)B - \alpha F$, which simplifies to:

$$\alpha \geq \frac{B}{B + F} \equiv \alpha^* \tag{5}$$

When independent constraints are absent ($\alpha < \alpha^*$), sending $s = A$ strictly dominates $s = L$ for type $\theta = L$. For type $\theta = A$, sending $s = A$ yields $B > 0$ with certainty, strictly dominating $s = L$.

Proof: When $\alpha < \alpha^*$, $s = A$ is M's strictly dominant strategy regardless of θ. The signaling stage collapses into a Pooling Equilibrium where M unconditionally reports $s = A$. ■

A3. Bayesian Updating, On-Path, and Off-Path Beliefs

In the pooling equilibrium, signal $s = A$ is sent on-path with probability 1. By Bayes' rule, the updated posterior belief following $s = A$ equals the prior:

$$\mu(s = A) = \Pr(\theta = A \mid s = A) = 1 - p \tag{6}$$

Proof: Because any non-zero prior satisfies $1 - p > \mu^* \approx 0$, the Ruler's unique strictly dominant action on-path is P_R (Purge).

To complete the definition of the Perfect Bayesian Equilibrium, off-path beliefs following $s = L$ are specified as $\mu(s = L) \leq \mu^*$, which weakly deters R from purging if $s = L$ were observed, fully satisfying PBE requirements. ■

A4. Proof of Proposition 2: Defensive Preemptive Rebellion

Anticipating P_R on-path, the Heir evaluates the expected utility of Waiting (W) versus Rebelling (B):

$$\mathbb{E}[U_H(W)] = -V_C$$
$$\mathbb{E}[U_H(B)] = \pi V_H + (1-\pi)(-V_C) - K$$

where $-V_C$ represents execution and clan extermination, K is the organizational cost of rebellion, and π is the probability of a successful coup.

The Heir chooses Rebel (B) if and only if $\mathbb{E}[U_H(B)] > \mathbb{E}[U_H(W)]$, which simplifies to:

$$\pi(V_H + V_C) > K \tag{7}$$

Proof: Because physical extermination is catastrophic ($-V_C \to -\infty$), the term $\pi(V_H + V_C)$ strictly dominates K for any $\pi > 0$. Defensive rebellion is the unique best response for a structurally loyal heir ($\theta = L$). ■

A5. N-Intermediary Collusion and the Echo Chamber

Let there be $N \geq 2$ competing intermediaries, $M_i \in \{M_1, M_2, \ldots, M_N\}$. Each intermediary simultaneously observes $\theta \in \{L, A\}$ and sends a signal $s_i \in \{L, A\}$.

Because $L_R \to \infty$, the Ruler's tolerance threshold vanishes ($\mu^* \to 0$). The Ruler's unique optimal response is to execute Purge (P_R) if at least one intermediary reports a threat:

$$\sigma_R(s_1, \ldots, s_N) = P_R \iff \exists i \in \{1, \ldots, N\} \text{ such that } s_i = A \tag{8}$$

Under $\alpha \to 0$, the Ruler lacks independent judicial channels to verify conflicting signals. If rival M_j reports $s_j = A$ while M_i reports $s_i = L$, the autocrat adopts a defensive heuristic: the dissenting intermediary M_i who reported loyalty is retroactively classified as

a co-conspirator attempting to shield a rebellious heir, incurring execution penalty $-F < 0$.

Let $\epsilon \equiv 1 - \Pr(s_{-i} = (L, \ldots, L))$ represent M_i's belief that at least one rival sends a threat signal ($s_j = A$). For any non-zero belief $\epsilon > 0$, the expected utility for M_i choosing $s_i = L$ given type $\theta = L$ is:

$$\mathbb{E}[U_{M_i}(s_i = L)] = (1 - \epsilon) \cdot 0 + \epsilon \cdot (-F) = -\epsilon F < 0 \tag{9}$$

Conversely, sending $s_i = A$ yields expected bureaucratic rent:

$$\mathbb{E}[U_{M_i}(s_i = A)] = (1 - \epsilon)B + \epsilon \cdot B_{\text{shared}} > 0 \tag{10}$$

where $B_{\text{shared}} > 0$ is the rent split among reporting agencies. Because $-\epsilon F < 0 < \mathbb{E}[U_{M_i}(s_i = A)]$, sending $s_i = A$ strictly dominates $s_i = L$ for all $M_i \in \{M_1, \ldots, M_N\}$.

A pure theorist might ask why the Ruler does not delay the purge to cross-examine intermediaries, or why an intermediary does not report $s_i = L$ to build a "truth-telling" reputation. Two structural constraints prevent this:

1. **Time-Inconsistency of Verification Delay:** If $\theta = A$, any temporal delay required for interrogation allows an ambitious heir to execute a coup, inflicting catastrophic loss $-L_R$. Because the expected cost of verification delay approaches $-L_R$, the Ruler cannot afford sequential cross-examination, making immediate purge upon receiving any $s_i = A$ a strictly dominant action.

2. **The Infeasibility of Reputation Building:** Without independent adjudication ($\alpha \to 0$), a truthful loyalty signal ($s_i = L$) during an intermediary-manufactured threat is structurally indistinguishable from active complicity in treason. Reputation mechanisms collapse when deviation carries a non-zero probability of immediate execution.

Proof: Threat signaling ($s_i = A$) is the strictly dominant strategy for all N interme-

diaries, establishing $(A, A, \ldots, A)$ as the unique Nash Equilibrium. Multiplying intelligence agencies under $\alpha \to 0$ generates systemic echo chambers rather than transparent information channels. ■

A6. Subgame: Orthogonal Signaling and Moral Docility

Let a prince's true characteristics consist of two independent dimensions: Political Capacity $C \in \{0, \bar{C}\}$ and Moral Docility $\eta \in \{\eta_{\text{low}}, \eta_{\text{high}}\}$. To survive Proposition 1, all princes set observable $C = 0$. Princes exert effort $e \geq 0$ to send an orthogonal moral signal (e.g., extreme filial rituals) with cost $\text{Cost} = \frac{e}{\eta}$. The Ruler awards the throne (V_H) to the prince sending the highest signal e^*.

For a prince with η_{high}, utility is $V_H - \frac{e}{\eta_{\text{high}}}$; for η_{low}, utility is $V_H - \frac{e}{\eta_{\text{low}}}$. A separating equilibrium exists where threshold e^* satisfies:

$$\eta_{\text{low}} V_H < e^* \leq \eta_{\text{high}} V_H \tag{11}$$

Proof: High-docility princes (η_{high}) successfully signal e^* and are selected. Because η is statistically independent of C (statecraft), orthogonal signaling effectively identifies docility but behaves as a random variable regarding political capacity. The Ruler optimizes for biological safety while systematically abandoning executive capacity, formalizing the mechanism of long-term adverse selection. ■

A7. Endogenizing the Secret Reserve: Ex-Ante Institutional Optimization

We endogenize the Ruler's choice of Information Transparency $\beta \in [0, 1]$. Let potential rent B be strictly increasing in target transparency: $B = \beta \bar{B}$, where $\bar{B}$ is maximum rent under Open Succession.

The Ruler solves:

$$\max_{\beta \in [0,1]} \mathbb{E}[U_R] \quad \text{subject to} \quad \alpha \geq \frac{\beta \bar{B}}{\beta \bar{B} + F} \tag{12}$$

Because absolute power dictates $\alpha \to 0$, the right-hand side of the IC inequality must approach zero to prevent the pooling equilibrium. Given $\bar{B} > 0$ and $F > 0$, the unique mathematical solution is:

$$\beta \to 0 \tag{13}$$

Proof: Unable to increase α without ceding absolute power, the Ruler cannot use independent punishment (αF) to deter perjury. Driving $\beta \to 0$ is the strictly dominant, ex-ante optimal institutional design to eliminate rent-seeking ($B \to 0$) and prevent the pooling equilibrium. ■

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