Man May Propose, God Disposes*

Political Time and the Fate of Designated Heirs in Imperial China

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Abstract

Succession rules may identify a future ruler while leaving the designated heir politically exposed before power changes hands. This article examines heir designation in imperial China, moving the unit of analysis from rulers who eventually took the throne to heirs named before succession occurred. We argue that designation created a waiting problem. It made an heir credible enough to attract support, but the same visibility could also draw clients and factional ties while inviting incumbent suspicion. The ruler–heir age gap captures part of this exposure because smaller gaps typically lengthen the period in which an heir could accumulate political ties before transfer. Among cases with recoverable birth years, larger gaps are associated with higher accession probabilities, with the clearest pattern in the Song-and-later sample. The evidence supports an exposure account rather than a clean causal effect of age gap or a strong same-generation rivalry mechanism. Succession institutions should therefore be understood as multi-stage arrangements: they may select and legitimate the chosen successor while failing to protect the designated successor during the wait for power.

Keywords: political succession; imperial China; primogeniture; political time; heirs

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1 Introduction

Succession rules reduce uncertainty at the moment of transfer, but they do not necessarily protect the successor before that moment arrives. Primogeniture identifies an heir by birth order, narrows bargaining among princes, and gives officials a focal point for loyalty. Yet a prince could be senior, formally designated, and publicly legitimate without ever reaching the throne. Comparative studies of succession usually begin at the vacancy, when elites coordinate after a ruler's exit (Herz 1952; Kurrild-Klitgaard 2000; Brownlee 2007; Frantz and Stein 2017; Meng 2021). This article moves the unit of analysis earlier, from the ruler who succeeded to the heir who had been named before succession occurred.

Imperial China provides unusually rich evidence on these unrealized successions. Crown-prince designation ordered the imperial family, furnished officials with a vocabulary of remonstrance, and connected present rule to a legitimate future (Zhang 1998; Wang and Xu 2018). Yet designation repeatedly failed to carry its beneficiary to the throne. Zhao Yi's observation that few crown princes after the Sui and Tang met a good end was pointed because it described breakdown inside a highly elaborated succession order (Zhao 2011). Figure 1, constructed from the author-collected databases described in Section 3, illustrates the contrast. Imperial tenure became more regular over the long run, whereas designated-heir accession remained volatile. Stabilization of imperial tenure did not translate into safer heirship.

We interpret this divergence as a problem of political time. A succession rule selects a future ruler when it identifies an heir, but it protects that heir only if he survives until authority can be transferred. Political time refers to the interval in which a publicly designated heir and a living incumbent coexist. During that interval, the heir's title can attract clients and factional support; the same process can also sharpen the incumbent's suspicion. The ruler-heir age gap is an imperfect proxy for this exposure. Smaller gaps typically place heirs earlier in the ruler's life course and lengthen the period in which support can accumulate. Larger gaps usually shorten that interval.

Among cases with recoverable birth years, larger age gaps are associated with higher accession probabilities. Designation-stage estimates imply roughly four to eight percentage points more accession for a ten-year larger gap; fuller specifications reach about twelve points but include realized ruler lifetime and should be read cautiously. The association is clearest in the Song-and-later sample, although the interaction estimates do not identify a sharp break at 960. After the Tang-Song transformation, the decline of hereditary aristocratic and military intermediaries plausibly made a designated heir's protection depend more on imperial tolerance inside a bureaucratic court. Inverse-probability weighting, remaining-

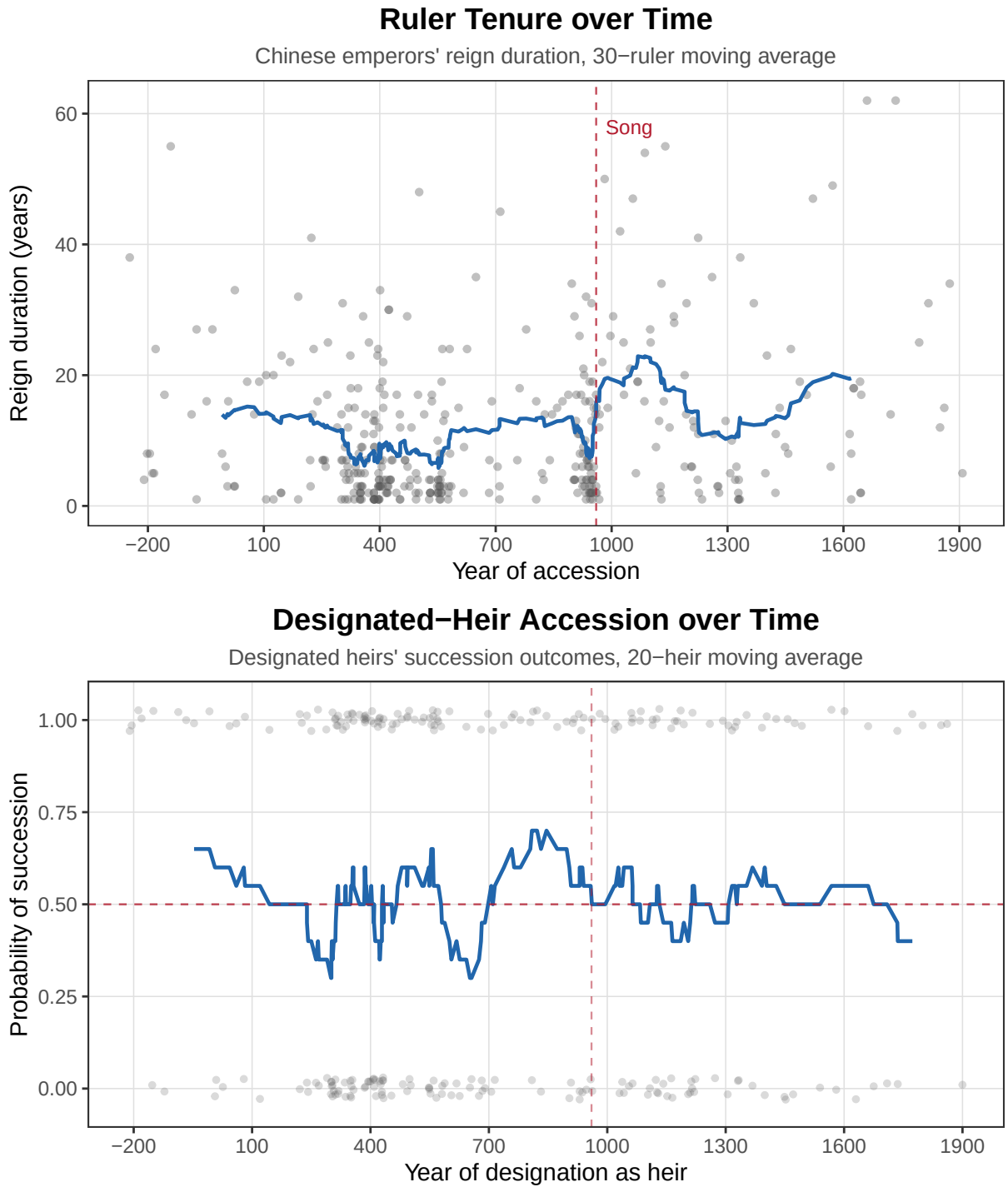

Figure 1: Imperial Rule and Designated Succession
Source: Author-collected Crown Successor and Chinese Emperor databases.

lifetime reparameterization, and sparse ruler fixed effects limit any claim of a clean causal rivalry effect. The results support an exposure interpretation: institutions selected heirs, but long overlap with the incumbent weakened their protective force.

2 Theory: Institutions, Waiting, and Political Time

2.1 The Missing Heir in Succession Theory

Political concentration makes transfer perilous. A claimant who loses may lose property, liberty, or life; an incumbent who retires cannot assume that yesterday's allies will protect him tomorrow (Svolik 2012; Bueno de Mesquita and Smith 2011, 2017). Rules are valuable because they narrow the set of admissible claimants and make elite coordination less costly. Primogeniture does so by converting birth order into entitlement. Parties, constitutional deputies, and royal-family councils do so through different organizations, but the coordinating logic is similar (Kurrild-Klitgaard 2000; Brownlee 2007; Frantz and Stein 2017; Meng 2021).

The comparative evidence for that view is substantial. In European monarchies, primogeniture is associated with fewer depositions and civil wars and with longer, more secure reigns (Kokkonen and Sundell 2014, 2020; Kokkonen, Møller and Sundell 2022). Modern authoritarian parties can supply an accepted pool of successors, while clear designation may contain the electoral disruption caused by leadership turnover (Brownlee 2007; Zeng 2020). Studies of Middle Eastern monarchies likewise show that dynastic institutions distribute offices and claims across ruling families, limiting unconstrained personal choice in succession (Herb 1999; Menaldo 2012; Yom and Gause 2012). Historical practice was rarely reducible to a single legal rule: in early modern Russia, for example, custom, designation, elite assent, and later statute interacted in making an heir (Bushkovitch 2021). Succession institutions are consequential because they are embedded in organizations and social relations that make some promises credible (North 1990; Møller 2016).

The outcome usually studied, however, is a transfer or a ruler's survival. That focus collapses several political events into one. A rule may settle eligibility, an incumbent may choose among eligible people, and the chosen person may still fail to inherit. These are different achievements. The first two create a designated successor; only the third produces a succession.

Before designation, officials could hedge among several possible futures. Once the heir was named, support for him became more valuable and more visible. Consort kin, tutors, ministers, military officers, and palace servants could attach themselves to the heir; rival princes acquired a clear target; and the incumbent could observe a network forming around

the person who would benefit from his death. Designation therefore coordinated expectations while also redistributing suspicion. Zhou (2023) captures this tension formally: the ruler wants to cultivate a successor but fears his accumulating power, while the successor wants to wait but fears removal. Our extension is to ask which heirship episodes gave this process enough time to become politically dangerous. Age gap enters for that purpose. It is an extra-institutional timing variable: the formal title may be identical, but the political accumulation made possible by that title varies with the heir's position in the ruler's life course.

An analysis confined to successful rulers misses this interval by construction. It sees the person who won the succession contest and omits earlier appointees who died, were deposed, or vanished. Turnover data are equally silent about how many proposed transfers failed before the transfer that entered the record. Recovering those failed proposals changes the dependent variable from the stability of the regime at succession to the survival of the selected successor before succession.

Age gap provides an imperfect but portable way to measure the temporal relation at stake. It locates ruler and heir within a political generation, and it approximates how much of the ruler's life remains after the heir's birth. A ten-year interval does not carry the same risk when an adult heir faces a middle-aged ruler as when a young heir faces an elderly one. The relevant clock is the interval they must occupy the court together.

2.2 Selection, Protection, and Transfer

Separating stages of succession clarifies why apparently competing findings in the literature can all be correct. A rule that narrows eligibility can reduce bargaining costs at the ruler's death even if it does nothing for a designated successor's security beforehand. A party may protect a successor by making removal costly to the incumbent, yet retain enough collective authority to replace that person without threatening the regime. A royal family can keep several eligible princes in reserve and postpone final selection, sacrificing clarity for flexibility. These arrangements solve different parts of the same problem.

Consider first the incumbent's choice. An unambiguous designated successor can reassure officials that offices, property, and policies will survive the ruler's death. That person can learn to govern and become acceptable to coercive actors. Yet every investment that makes him credible after transfer can make him dangerous before it. Administrative experience creates a record on which elites can coordinate. Control over appointments creates clients. Military responsibility supplies both reputation and force. Even ceremonial precedence tells the court where future influence will lie. The incumbent wants preparation for transfer without independent power beforehand.

The designated successor faces the inverse commitment problem. Waiting is attractive when accession is likely and the incumbent cannot cheaply revoke the bargain. It is hazardous when designation can be withdrawn, rival claimants remain available, or the incumbent's death is remote. A successor who builds no network may be unable to defend his title; one who builds too visible a network may provoke removal. Patience depends on expectations about time, enforcement, and the conduct of other elites.

The ruling coalition adds a third set of incentives. Ministers and military officers gain from an orderly transfer, but they also have reasons to invest early in the likely winner. If the incumbent interprets such investment as defection, coordination around the heir can destabilize the bargain it was meant to secure. Organizations can mitigate the problem by regulating access to the designated successor, limiting his independent patronage, fixing the transfer date, or guaranteeing the incumbent's retirement. Where no actor can enforce those arrangements against the ruler, the heir's security rests heavily on continued personal tolerance.

This distinction changes how primogeniture should be interpreted in the selected sample. Primogeniture may strongly determine which sons enter the pool of designated heirs. Once the sample is restricted to designees, however, eldest-son status may have little association with accession and can even be negative. Seniority, a recognized maternal line, and an established household could make an eldest son likely to be chosen. The same qualities could give him more time and organizational standing to accumulate influence. A null or negative coefficient within the selected sample therefore should not be read as evidence of institutional irrelevance. It shows that institutions can be powerful at selection and weak at protection in the same case.

The framework also distinguishes two observables often bundled under waiting. *Duration* is the time during which influence can accumulate and conflict can occur. *Proximity* is the heir's capacity to operate as a contemporary alternative to the ruler. Age gap bears on both, while the age of the heir at designation bears more directly on immediate capacity. A design that observes only final outcomes cannot fully separate them. The model below keeps both channels visible so that the empirical section can ask which interpretation survives more demanding controls.

2.3 A Simple Model of Waiting

The model links designation to two observable risks. A longer overlap between ruler and heir gives more opportunities for removal, replacement, or challenge. A smaller age gap may also make the heir a more capable contemporary alternative to the incumbent. The model adds

this successor-level timing variable to Zhou's formal account of the ruler-successor dilemma. It is not estimated structurally; it organizes the empirical expectations tested below.

Consider an infinite-horizon setting with an incumbent ruler R, a designated heir H, and a ruling coalition. The regime produces a per-period benefit r. The ruler's effective control over the regime is summarized by $\alpha \in [0, 1]$. A higher α means that the ruler controls a larger share of the regime's resources and faces a weaker coalition constraint. This is a reduced-form device, not a direct label for a whole dynasty or era. In a court dominated by aristocratic houses, military governors, or other autonomous corporate actors, α is lower; in a more centralized monarchy, α is higher.

The ruler dies in the next period with probability p_{t+1}, where p_t rises with age and eventually approaches one. If there is no accepted successor when the ruler dies, the dynasty faces disorder at cost $c > 0$. The ruler cares about this dynastic future with weight $\eta > 0$. Thus even a self-interested ruler has some reason to keep a successor, especially as death becomes more likely.

The heir has relative political power

$$q_t = s(A) + \sum_{i=1}^{t} z_i, \tag{1}$$

where A is the ruler-heir age gap, $s(A)$ is the heir's initial relative power, and z_i is a period-specific increment in political strength. We assume $z_i \sim N(\mu, \sigma^2)$, with $\mu > 0$. The core assumption is

$$s'(A) < 0. \tag{2}$$

A smaller age gap gives the heir greater initial political maturity relative to the ruler: he is closer in age, more likely to be a competent adult during the ruler's active years, and more capable of attracting elite investment. It also gives his formal status more time to become practical influence within the court. A larger gap places him farther into the future. This is the *proximity channel*.

Age gap also affects how long the two actors are exposed to one another. Let L denote the ruler's lifetime, measured in years, and define the maximum post-birth exposure horizon as

$$T(A, L) = L - A. \tag{3}$$

Apart from the inclusive-year convention in the data, this is the number of years between the heir's birth and the ruler's death. Holding L fixed, a larger A shortens T. The heir then has fewer periods in which to cross a challenge threshold, and the ruler has fewer periods in which to revise his choice or act on suspicion. This is the *exposure channel*. Actual heirship

may begin well after birth, so T is an upper bound on the observed designation interval. It nonetheless clarifies why ruler lifetime and age gap cannot be interpreted as unrelated demographic controls.

The heir may challenge the ruler. If he challenges, he succeeds with probability increasing in q_t. For simplicity, let the probability of success be q_t, after truncating to the unit interval. If the challenge succeeds, the heir receives the value of rule, αR. If it fails, he suffers a penalty $b > 0$. A rational heir challenges when

$$q_t \alpha R \geq (1 - q_t) b. \tag{4}$$

This gives a challenge threshold

$$q_t \geq q^*(\alpha) = \frac{b}{b + \alpha R}. \tag{5}$$

The threshold falls as α rises: when centralized rule makes the throne more valuable, a sufficiently powerful heir has stronger incentives to move early.

The ruler, meanwhile, decides whether to keep or remove the heir. Removing the heir reduces the danger of a rival but increases the risk of dynastic disorder if the ruler dies without a credible replacement. The ruler therefore follows a cutoff rule: for each period t, there is a tolerance threshold $\bar{q}_t(\alpha, p_{t+1})$. If q_t exceeds the threshold, the ruler removes the heir; otherwise, he keeps him. The threshold is lower when α is high, because a centralized ruler has more to lose from a rival future sovereign. The threshold is higher when p_{t+1} is high, because a ruler near death pays a larger expected cost for leaving succession unsettled.

Proposition 1. *Holding political structure and ruler lifetime fixed, a larger ruler-heir age gap lowers the probability that the heir crosses either the ruler's removal threshold or the heir's challenge threshold before succession. It does so by lowering initial relative power and shortening the exposure horizon.*

The intuition follows directly from the distribution of q_t. For any fixed threshold x,

$$\Pr(q_t \geq x) = 1 - \Phi\left(\frac{x - s(A) - t\mu}{\sqrt{t}\sigma}\right). \tag{6}$$

Since $s'(A) < 0$, the probability of crossing the threshold at any given t decreases as A increases. The cumulative probability of ever crossing also rises with the number of periods at risk; by equation 3, that number falls as A grows. Both channels therefore predict a positive association between age gap and accession. They also warn against reading the coefficient as a pure measure of interpersonal threat.

Historical scope. The age-gap mechanism should be most visible when ruler autonomy is high and coalition power is less decisive. When α is low, autonomous coalition actors can protect, replace, or manipulate an heir for reasons not reducible to his relation with the ruler. When α is high, the ruler's own tolerance becomes more decisive, so the heir's position in the ruler's political life course should matter more directly. The Tang-Song transformation gives this scope condition historical content. It did not create centralized monarchy ex nihilo, and it did not eliminate ministers, factions, or palace politics. It did, however, weaken many hereditary and military intermediaries that had previously brokered succession, while deepening a bureaucratic order in which the heir's public status depended heavily on court recognition and imperial tolerance. The empirical implication is therefore comparative, not mechanical: Song-and-later cases should make the ruler-heir timing logic easier to see, even if a single 960 dummy cannot capture the gradual and uneven character of the transformation.

Testing this conjecture directly would require measures of ruler autonomy, aristocratic organization, military brokerage, and bureaucratic dependence that are not available consistently across two millennia. The period comparison therefore guides historical interpretation rather than serving as a clean causal test.

Two expectations follow.

Hypothesis 1. *The larger the age gap between the ruler and the designated heir, the higher the probability that the heir successfully ascends to the throne.*

Hypothesis 2. *The longer the ruler's lifetime, the lower the probability that the designated heir successfully ascends to the throne.*

The model also limits the argument. Institutions remain central: designation creates the heir and gives him legitimacy. The claim is that legitimacy must be politically carried through time. The heir's danger comes from occupying a position that is institutionally elevated before it is sovereign.

Time, too, has no single effect in authoritarian regimes. It can strengthen incumbents by letting them build patronage, remove rivals, and learn the coalition game (Abramson and Rivera 2016). In succession politics, time is relational. The incumbent already controls coercion and appointment; the heir holds a recognized claim that can attract supporters before it can command obedience. A long wait therefore carries different implications for the two actors.

The empirical implications also specify how null results should be read. If controlling the remaining-life horizon sharply attenuates the age-gap coefficient, the data favor exposure over a strong proximity claim. If a ruler fixed-effects model is imprecise, the evidence cannot establish that rulers systematically treated their own closer-aged heirs more harshly. If the

Song interaction is imprecise, the result limits what can be inferred from a date dummy; it does not erase the historical argument that the Tang-Song transformation changed the coalition environment in which heirs waited. These qualifications mark what each specification can identify.

3 Data and Descriptive Patterns

3.1 Historical Scope and Source Base

The empirical analysis uses two original datasets. The first, the Crown Successor database, contains 259 designation events from the Qin through the Qing. The designated heir is the unit of analysis. If the same person was designated, removed, and later designated again, the appointments are treated as separate observations because each appointment created a new waiting period. This coding choice matters for cases in which the same prince's political status changed more than once. A prince who was first named, then removed, and later restored passed through distinct political episodes, each with its own coalition environment and risk of failure.

The second dataset, the Chinese Emperor database, contains 383 imperial rulers. It records ruler identity, birth and death years, accession and abdication years, heir appointment, empress appointment, number of sons, relationship to the previous ruler, and mode of exit. In this paper it serves two purposes. First, it allows us to show that ruler tenure and heir success followed different historical trajectories. Second, it provides a broader ruler-centered context for a project whose main innovation is heir-centered. The comparison is useful because the history of emperors is often written as a history of those who succeeded. The history of heirs is instead a history of both realized and unrealized futures.

Both datasets were hand collected by the authors and research assistants from historical sources. The principal source base includes the Twenty-Four Histories in the Zhonghua Book Company punctuated-and-collated editions, the *Zizhi tongjian*, the *Qing shi gao*, transmitted historical classics, local and biographical materials, and published collections of excavated epitaphs and tomb inscriptions (Sima 1956; Zhao 1977; Zhou and Zhao 1992). The source work proceeded case by case. We identified a ruler, reconstructed the relevant succession episode, recorded the named heir, and then coded the beginning and end of the heirship, family relation, maternal status, competitors, court events, and final outcome. Where dynastic histories disagreed or where later historical compilations supplied additional chronological detail, the coding retained the most explicit recoverable date and noted ambiguity in the underlying research file.

The source base is important because failed heirs are less visible in ruler-centered histories. Excavated epitaphs and tomb inscriptions are especially useful for birth years, maternal status, daughters, and collateral kin who were treated unevenly in official narrative histories. Standard dynastic histories often record the accession of successful rulers more carefully than the careers of failed heirs. Tomb materials, genealogical notes, and biographical fragments help recover people who disappear from a ruler-centered account. The same materials also make the older-sister proxy possible, though unevenly, because daughters and sisters were less consistently recorded than princes.

The historical record is uneven, especially for short-lived regimes and non-Han conquest or frontier polities. We coded only information that could be recovered from identifiable historical sources and retained missing values, avoiding mechanical imputation in the source file. This conservative rule reduces sample size but avoids manufacturing precision. It also means that the estimates below should be read as evidence from the recoverable record, not as a claim that every succession episode in two millennia of imperial history can be observed with equal clarity.

The Crown Successor database is deliberately broad. It includes recognized imperial dynasties as well as regimes from the Sixteen Kingdoms, Northern and Southern Dynasties, Five Dynasties and Ten Kingdoms, and other polities recorded in the historical tradition. The aim is to capture the institutional practice of designating future rulers across different political scales and ethnic regimes, without imposing a single orthodox dynastic narrative. This matters because succession rules varied. Some regimes emphasized father-son transmission; others used brotherly succession, uncle-nephew succession, or more flexible forms of royal selection. For this reason, primogeniture is measured in the sample, not assumed.

The breadth of the sample also forces caution. A single regression table cannot erase the difference between a mature unified empire, a conquest dynasty, a regional court, and a regime born in civil war. The empirical strategy therefore combines a broad sample with fixed effects, period splits, and robustness checks that narrow the comparison. The broad sample tells us whether the waiting problem is a recurrent feature of designated succession. The narrower specifications ask whether the same relationship survives when obvious sources of heterogeneity are reduced.

The episode-level coding deserves emphasis. Two princes designated by the same ruler are separate observations because each occupied the promised future at a different moment. A prince removed and later restored also contributes two episodes. Restoration is not a continuation of an uninterrupted legal status: removal dissolves his public claim, reshuffles allies, and changes the ruler's information about him. The replication files flag the two repeated ruler-heir pairs and report a one-record-per-pair specification so that this decision

cannot drive the result.

Chronological checks began with identities and did not treat dates as self-validating. The analytic age gap was recomputed from the two birth years and compared with the signed difference in the source spreadsheet; all 192 overlaps agree. The binary accession variable agrees with the three-category ending in all 259 rows. Inclusive duration fields differ from simple year subtraction by one, as intended. Three negative age gaps identify older collateral heirs, not arithmetic errors. One episode postdates the emperor file's recorded loss of rule: Sima Ye was designated in 312 after Emperor Huai had been captured in 311. This is a substantively meaningful interregnum, not an arithmetic impossibility. The episode is retained in the main analysis and omitted only from models that require a nonnegative regnal year at designation.

The emperor merge supplies ruler characteristics that would otherwise be unavailable in the heir file. Personal name alone is not a safe key because rulers could accede more than once. We join on personal name and accession year; the key is unique in the emperor data and matches 250 heir episodes without expanding the number of rows. The unmatched cases remain in the heir dataset and are excluded only from specifications that use merged ruler covariates.

These procedures improve reproducibility but cannot equalize source quality. Successful heirs generally left fuller biographies, reign records, and genealogies. Failed heirs in short-lived polities may survive only in an accusation, an execution notice, or a later retrospective account. Excavated epitaphs partly correct that imbalance, especially for birth dates and maternal kin, but the correction is uneven across periods. For that reason, the paper releases both the 259-row analysis file and the exact 184-row full-model sample, so readers can see the exclusions that a single cleaned file would hide.

3.2 Outcome and Main Explanatory Variable

The dependent variable equals one if the designated heir eventually ascended and zero otherwise. A second coding distinguishes natural death before succession, political failure (deposition, killing, or disappearance), and accession. Removing natural deaths leaves an observational comparison, while separating the political endings that motivate the argument from one important source of non-accession.

The main explanatory variable is the ruler-heir age gap:

$$\text{Age gap}_i = \text{Birth year of heir}_i - \text{Birth year of ruler}_i. \tag{7}$$

In ordinary cases this is the ruler's age when the heir was born. The original spreadsheet

contains the same difference with the opposite sign; all 192 overlapping values agree after reversal. Three designated collateral heirs are older than the incumbent and have negative gaps. They are retained in the main analysis and removed in a diagnostic specification.

The measure bundles the two channels set out above. It places the heir relative to the ruler's political generation and, together with ruler lifetime, determines the ruler's remaining years after the heir's birth. That second relation creates a control problem. Realized ruler lifetime is observed after designation and may itself be affected by succession conflict. In cases of violent replacement, patricide, fratricide, or forced removal, the end of the ruler's life or reign can be closely tied to the heir's success or failure. In causal-graph terms, age gap, succession conflict, ruler lifetime, and accession are not cleanly ordered pretreatment variables. Conditioning on realized lifetime can therefore condition on a downstream variable, and in some cases on a collider shaped by the same political process that produces the outcome.

For this reason, the specifications proceed in stages. The first uses age gap alone. The second adds variables observable at or close to designation, including potential competitors, eldest-son status, maternal status, unified rule, and period. The third adds dynasty fixed effects. These pre-lifetime specifications are the main benchmarks. The full model then introduces ruler lifetime and two court-environment controls, a dethroned empress and a recorded powerful minister or regent. Because realized lifetime may be partly post-treatment, the full coefficient is best treated as a conditional diagnostic and possible upper-bound estimate, not as the preferred causal quantity. Heir rebellion, actual heirship duration, and heir lifetime occur during or after the process being explained; they appear only as diagnostics. HC1 standard errors are used in the main table, with dynasty- and ruler-clustered inference reported separately. These regressions test observable implications of the waiting argument. They do not identify the causal effect of a birth year, since rulers could choose, retain, or remove heirs partly on the basis of age, factional support, or expected longevity.

Birth-year recovery is the main source of sample selection. Age gap is observed for 192 of 259 episodes, and the full model retains 184 complete cases. Table 2 shows that observability is not random: 63.0 percent of cases with an observed gap ascended, compared with 16.4 percent of cases without one. Official histories and later compilations preserve chronology more readily for successful or prominent princes than for heirs in short-lived regimes. The analysis therefore reports complete-case estimates, uses inverse-probability weighting as a documentation diagnostic, and treats the results as evidence from the recoverable record rather than as population estimates for all imperial heirship episodes.

We do not use multiple imputation in the main analysis. For these historical data, missing birth years are not plausibly random gaps in an otherwise homogeneous survey. They often reflect source survival, political failure, and the narrative priorities of dynastic histories. The

Table 1: Descriptive Statistics

Variable	N	Mean	SD	Min	Median	Max
Succession	259	0.510	0.501	0.000	1.000	1.000
Ruler-heir age gap	192	24.766	12.506	-34.000	22.000	62.000
Ruler lifetime	239	50.456	15.523	17.000	51.000	89.000
Potential competitors	258	6.333	6.803	0.000	4.000	38.000
Eldest son	256	0.574	0.495	0.000	1.000	1.000
Mother was empress	239	0.515	0.501	0.000	1.000	1.000
Dethroned empress	259	0.035	0.183	0.000	0.000	1.000
Powerful minister	259	0.135	0.343	0.000	0.000	1.000
Successor rebellion	259	0.031	0.173	0.000	0.000	1.000
Unified regime	259	0.332	0.472	0.000	0.000	1.000
Older sister	158	0.525	0.501	0.000	1.000	1.000

Table 2: Age-Gap Observability and Sample Composition

Age gap recorded	N	Succession	Political failure	Natural death	Song and later	Eldest son
No	67	0.164	0.627	0.209	0.164	0.594
Yes	192	0.630	0.250	0.120	0.359	0.568

Notes: The age gap is recoverable for 192 of 259 heir episodes. The full model uses 184 complete cases after listwise deletion on its additional covariates. Differences in outcome rates show that archival observability is not random; the IPW specification in Table 7 adjusts only for observed predictors of documentation.

main strategy is therefore to report complete-case estimates, show the observability selection directly, use IPW as a diagnostic based only on observed documentation predictors, and check whether the pattern remains in better-documented dynasties.

3.3 Descriptive Evidence

Among 259 designated-heir episodes, 132 ended in accession, 37 in natural death, and 90 in deposition, killing, or disappearance (Figure 2). These counts cannot show that designation was useless, because the data contain no counterfactual pool of plausible unnamed claimants. They do show that recognized status was a poor guarantee. More than a third of all appointments ended in an overt political failure before the throne became available.

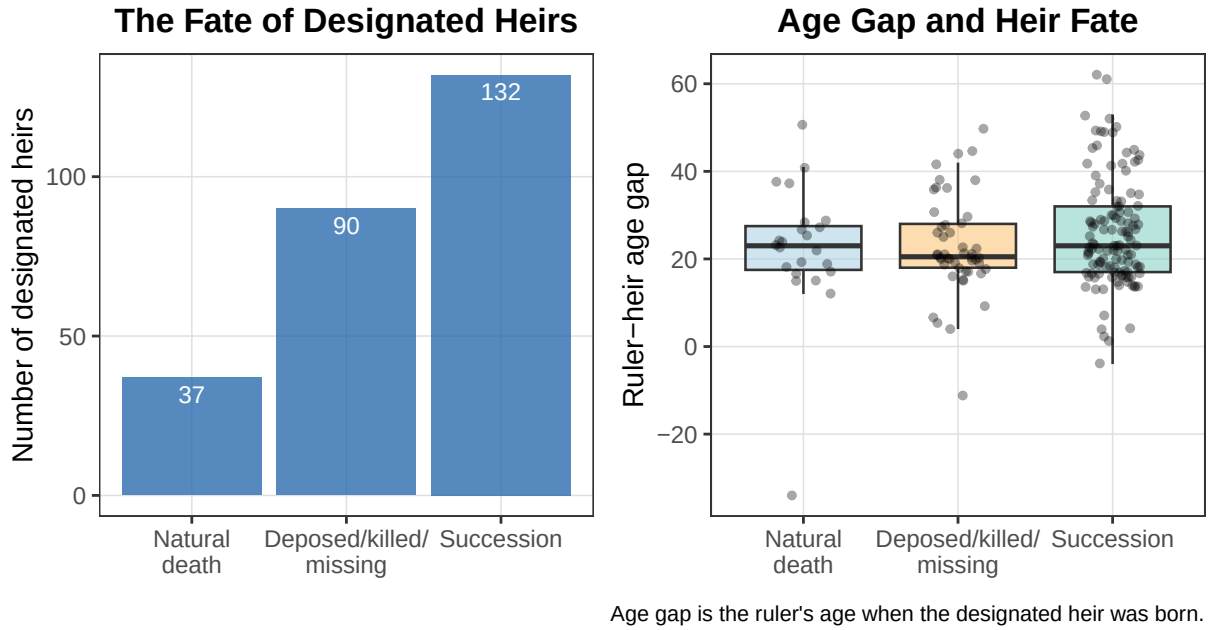

Figure 2: The Fate of Designated Heirs

Table 3 supplies a second useful baseline. Eldest-son heirs were common, confirming the practical importance of lineal claims, but their raw accession rate was 0.490, against 0.550 for other heirs. The difference is small and statistically weak. Primogeniture clearly affected who was named; this comparison asks the different question of whether those heirs were unusually well protected.

The pattern is historically plausible. Eldest sons were often designated precisely because they were visible, normatively preferred, and politically mature. Those same features could become liabilities. An eldest son with an established household, a known maternal family, a circle of tutors and officials, and a plausible claim to public loyalty might embody dynastic

continuity. He might also embody a rival political future. Primogeniture had two faces: it clarified who should inherit and could make that person unusually conspicuous.

Table 3: Eldest-Son Designation and Heir Outcomes

Eldest-son heir	N	Successes	Success rate	Natural deaths	Political failures
No	109	60	0.550	12	37
Yes	147	72	0.490	25	50

The age-gap plots are suggestive without settling the argument. Successful heirs lie farther from rulers on average, and the unadjusted logit smooth in Figure 3 rises with the gap. The bivariate relationship is modest: its uncertainty reaches zero at the 95 percent level. Its value is to motivate comparisons within dynasties and under alternative treatments of waiting exposure.

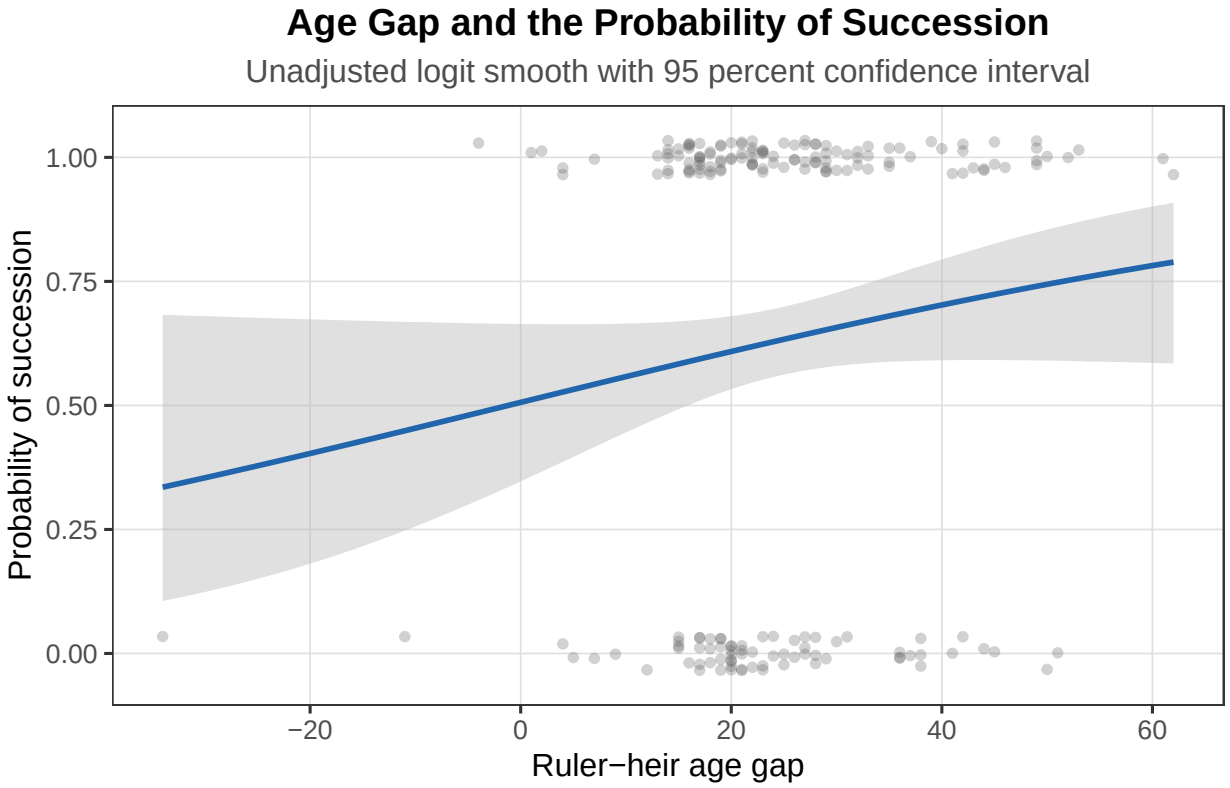

Figure 3: Age Gap and the Probability of Succession

The descriptive evidence separates legitimacy from survival. The regressions that follow ask whether political time helps account for that separation. They estimate associations in an incomplete historical record without treating age at birth as an exogenous treatment.

4 Empirical Evidence: Main Results and Specification Sensitivity

4.1 Main Models and Interpretation

Table 4 uses linear probability models so that coefficients can be read directly as changes in accession probability. The choice is practical as well as presentational. The sample is small, many dynasties contribute only a few observations, and several court variables are rare; a nonlinear model with dozens of fixed effects readily encounters separation. Logit and probit models without dynasty fixed effects are reported as functional-form checks, with average marginal effects and full Delta-method standard errors.

Table 4: Age Gap and the Probability of Succession

	Bivar. (1)	Desig. (2)	Desig.+FE (3)	Full (4)	No deaths (5)	Interact. (6)
Age gap	0.005*	0.004*	0.008**	0.012***	0.012***	0.012**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)
Song and later		-0.008				-0.115
		(0.076)				(0.320)
Age gap × Song and later						0.001
						(0.006)
Ruler lifetime				-0.009**	-0.006	-0.008**
				(0.003)	(0.004)	(0.004)
Competitors		0.001	0.003	0.008	0.005	0.008
		(0.005)	(0.007)	(0.007)	(0.007)	(0.007)
Eldest son		-0.079	-0.188**	-0.168*	-0.082	-0.171*
		(0.075)	(0.088)	(0.090)	(0.094)	(0.091)
Mother empress		0.050	0.047	0.038	0.025	0.037
		(0.075)	(0.086)	(0.086)	(0.085)	(0.086)
Dethroned empress				-0.170	-0.334	-0.171
				(0.212)	(0.220)	(0.213)
Powerful minister				-0.222	-0.374**	-0.218
				(0.152)	(0.160)	(0.150)
Unified regime		-0.039	0.208	0.193	0.051	0.194
		(0.074)	(0.235)	(0.202)	(0.213)	(0.202)
Dynasty fixed effects	No	No	Yes	Yes	Yes	Yes
Lifetime/court events	No	No	No	Yes	Yes	Yes
Sample	Gap obs.	Desig.	Desig.+FE	Full	No deaths	Full
Observations	192	185	185	184	161	184
R^2	0.015	0.025	0.277	0.322	0.389	0.323
Adjusted R^2	0.010	-0.008	0.049	0.088	0.135	0.075

Notes: Linear probability models. HC1 robust standard errors in parentheses. Model 2 includes designation-stage covariates and a Song-and-later indicator; Model 3 replaces that period indicator with dynasty fixed effects. Models 4–6 add ruler lifetime and court-event covariates. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 4 is best read as a sequence of increasingly restrictive comparisons. With age gap

alone, a one-year increase is associated with 0.5 percentage points more accession ($p = 0.063$). Adding designation-stage covariates leaves the estimate at 0.4 points ($p = 0.095$). Dynasty fixed effects raise it to 0.8 points and improve precision. These pre-lifetime estimates, roughly four to eight percentage points for a ten-year age difference, are the baseline range we put the most weight on. The full model reaches 1.2 points per year, but it does so after adding realized ruler lifetime and court events. That estimate is useful, especially for comparing exposure-related specifications, but it should be read as a conditional upper-bound estimate, not the cleanest benchmark.

The larger coefficient in the controlled models has two main sources. Dynasty fixed effects compare heirs within a common regime, avoiding comparisons between a well-documented unified dynasty and a short-lived regional court. Ruler lifetime is an additional suppressor. It is positively correlated with age gap and negatively associated with accession. More importantly, lifetime and age gap jointly encode the ruler's remaining years after the heir's birth. Since realized lifetime may also be affected by succession conflict, the full coefficient is a poor candidate for a clean estimate of generational rivalry.

Removing natural deaths leaves the full-model coefficient at 0.012. This rules out the simplest story in which the association consists only of heirs dying of ordinary causes. Demographic timing still matters, since the ruler's death determines when accession becomes possible. The restricted result is best understood as evidence that age gap also separates accession from deposition, killing, and disappearance.

Ruler lifetime is negative in the full model. Each additional year is associated with just under one percentage point less accession, although the coefficient loses precision after natural deaths are removed. The sign accords with the exposure channel: a long-lived ruler leaves more time for replacement, conflict, and a change of preference. The powerful-minister variable is retained only as a coarse court-environment control. Its coefficient is negative but imprecise in the full sample and larger in the comparison that excludes natural deaths. The indicator cannot distinguish third-party protection, manipulation, replacement, or the ruler's own distrust. We therefore do not treat it as a separate mechanism.

Eldest-son status requires separate interpretation. Its coefficient is negative in every specification in which it appears. The estimate is small and imprecise in the designation-stage model, becomes larger and statistically significant after dynasty fixed effects are introduced, remains weakly significant in the full and interaction models, and attenuates once natural deaths are removed. This pattern is conditional on designation. Primogeniture strongly shaped who entered the pool of named heirs, whereas Table 4 examines what happened after that selection.

Among designated heirs, eldest sons were especially legible political figures: senior, norma-

tively preferred, and often surrounded by established households, maternal kin, tutors, and early supporters. These attributes strengthened their claims to succession while also making them conspicuous focal points for rivals and for incumbents monitoring the accumulation of support around a future ruler. Eldest sons were also likely to arrive earlier in a ruler's reproductive life, which means that family structure can connect strong institutional claims to longer exposure. The negative coefficient therefore need not imply that primogeniture was harmful in a simple causal sense. It may partly reflect the same waiting logic operating through birth order: the prince most entitled to inherit was often the prince most visible, most networked, and exposed for longest. The attenuation in the no-deaths sample indicates that ordinary mortality during a long wait contributes to the negative association. The uniformly negative signs nevertheless show that eldest-son status provided no reliable insurance once a prince had been named. Institutional entitlement and institutional protection operated on different margins. Maternal status, by comparison, is unstable across the models.

The Tang-Song scope condition is examined more directly in Table 5. In designation-stage models, the pre-Song age-gap estimate is essentially zero, while the Song-and-later estimate is 0.011 and highly significant. In the full models, the pre-Song estimate is positive but imprecise; the Song-and-later estimate is 0.012 and significant. The age-gap logic is therefore more visible after the Tang-Song transformation, exactly where the theory expects the ruler-heir relationship to matter more directly.

Table 5: Age-Gap Heterogeneity Before and After the Tang-Song Transformation

	Designation-stage models			Full models		
	All	Pre-Song	Song and later	All	Pre-Song	Song and later
Age gap	0.004*	-0.000	0.011***	0.012***	0.010	0.012***
	(0.003)	(0.004)	(0.003)	(0.003)	(0.007)	(0.004)
Designation covariates	Yes	Yes	Yes	Yes	Yes	Yes
Dynasty fixed effects	No	No	No	Yes	Yes	Yes
Lifetime/court events	No	No	No	Yes	Yes	Yes
Observations	185	116	69	184	116	68
R^2	0.025	0.026	0.121	0.322	0.344	0.365
Adjusted R^2	-0.008	-0.018	0.051	0.088	-0.005	0.166

Notes: Linear probability models with HC1 robust standard errors in parentheses. Pre-Song observations are episodes before 960; Song-and-later observations are episodes in 960 or later. The split is a heterogeneity check motivated by the Tang-Song transformation, not a claim that the institutional change occurred discontinuously in 960. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

This heterogeneity should still be read carefully. Model 6 in Table 4 includes the Song-and-later indicator, age gap, and their interaction. The interaction is 0.001 with a standard error of 0.006, so the data do not identify a sharp break at 960. The Tang-Song transformation was gradual, regionally uneven, and mediated by war, conquest, institutional rebuilding, and

changes in elite composition. The separate-sample estimates support the historical claim that age gap became more consequential after the transformation; the interaction cautions against treating 960 as a clean discontinuity.

Table 6 adds two diagnostics tied to this interpretation. Panel A shows that the Song-and-later estimate is not driven by two institutional edge cases. It remains positive after dropping Qing secret-designation episodes, where public exposure was deliberately muted, and after dropping one-year heirship spells, where little time existed for a public heirship to generate clients, expectations, or suspicion. Panel B uses the powerful-minister/regent indicator only as a descriptive proxy for third-party brokerage. Such episodes are much more common before the Song than after it. The Song-and-later cell with a powerful minister contains only four cases, so it cannot support a separate mechanism. Its value is historical: it is consistent with the claim that pre-Song succession more often unfolded inside a broader coalition game, while Song-and-later heirship more often depended on surviving inside a bureaucratic court centered on the emperor.

Table 6: Tang-Song Diagnostics for the Age-Gap Argument

Panel A. Age-gap estimates under period-specific restrictions

Model	Sample	Estimate	SE	95% CI	N
Designation-stage	Pre-Song	-0.000	(0.004)	[-0.008, 0.008]	116
Designation-stage	Song and later	0.011***	(0.003)	[0.005, 0.017]	69
Designation-stage	Song and later, no Qing secret designation	0.011***	(0.003)	[0.004, 0.017]	62
Designation-stage	Song and later, no one-year spells	0.011***	(0.003)	[0.005, 0.017]	59
Full	Pre-Song	0.010	(0.007)	[-0.003, 0.023]	116
Full	Song and later	0.012***	(0.004)	[0.004, 0.021]	68
Full	Song and later, no Qing secret designation	0.010**	(0.005)	[0.001, 0.020]	61
Full	Song and later, no one-year spells	0.012**	(0.004)	[0.003, 0.021]	58

Panel B. Powerful-minister/regent environment by period

Period	N	Minister share	Succession without minister	Succession with minister	Minister episodes
Pre-Song	174	0.178	0.545	0.387	31
Song and later	79	0.051	0.547	0.250	4

Notes: Panel A reports the age-gap coefficient. Designation-stage models include potential competitors, eldest-son status, maternal-empress status, and unified regime. Full models add ruler lifetime, dethroned-empress status, powerful minister/regent, and dynasty fixed effects. The Qing restriction drops Qing cases under Yongzheng and later. The one-year restriction drops heirship spells lasting one inclusive year or less. Panel B is descriptive and uses all episodes with a coded powerful-minister/regent indicator. The indicator is a coarse diagnostic of third-party brokerage, not a separate causal mechanism. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

4.2 Specification Sensitivity and Limits

Table 7 foregrounds the specifications that matter most for interpretation. Several test robustness to common modeling choices; others probe exposure, proximity, or archival

selection. Appendix Table 8 reports the fuller set of mechanical variants.

Table 7: Key Diagnostics for the Age-Gap Estimate

Specification	Estimate	SE	95% CI	N
Bivariate LPM	0.005*	(0.003)	[-0.000, 0.010]	192
Designation covariates	0.004*	(0.003)	[-0.001, 0.010]	185
Full LPM, dynasty FE	0.012***	(0.003)	[0.006, 0.019]	184
High-documentation dynasties	0.010***	(0.003)	[0.004, 0.017]	92
Excludes Qing secret designations	0.012***	(0.004)	[0.004, 0.019]	177
Excludes one-year heirship spells	0.013***	(0.004)	[0.005, 0.021]	153
Controls for heir age at designation	0.027***	(0.004)	[0.019, 0.034]	176
Eldest-son heirs only	0.022***	(0.006)	[0.009, 0.034]	105
Logit AME, no dynasty FE	0.011***	(0.003)	[0.005, 0.017]	184
IPW for age-gap observability	0.004	(0.003)	[-0.001, 0.010]	185
Controls for ruler's remaining lifetime	0.004	(0.003)	[-0.002, 0.010]	184
Ruler fixed effects	0.015	(0.015)	[-0.016, 0.046]	185

Notes: Entries report the age-gap coefficient from linear probability models unless otherwise specified. Rows first report baseline and supportive checks, then conservative diagnostics. The high-documentation row restricts the designation-covariate model to dynasties with at least seven heir episodes and at least 80% age-gap observability. The Qing secret-designation row drops Qing cases under Yongzheng and later, where secret designation weakens public exposure. The one-year row drops heirship spells lasting one inclusive year or less. The logit row reports the average marginal effect with Delta-method standard errors from a model without dynasty fixed effects; it is a functional-form check because dynasty fixed effects create separation in nonlinear models. The inverse-probability-weighted row adjusts for age-gap observability using recorded family, regime, and period covariates. In the remaining-lifetime model, the coefficient on the ruler's remaining years after the heir's birth is -0.009 (SE 0.004). The remaining-lifetime and ruler-fixed-effects rows probe mechanisms and are expected to be imprecise. A fuller specification-sensitivity table appears in Appendix Table 8. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 7 first shows where the association holds up. The estimate is positive in the bivariate, designation-stage, and full fixed-effects specifications. It remains positive in the eldest-son sample, where a simple primogeniture story would expect legal status to do most of the work. A high-documentation check gives a similar message. Restricting the designation-stage model to dynasties with at least seven heir episodes and at least 80 percent age-gap observability leaves 98 episodes, 92 of them with age gaps. The estimated coefficient is 0.010 (SE 0.003). This check cannot solve all selection problems, but it shows that the pattern is not generated only by the worst-documented regimes.

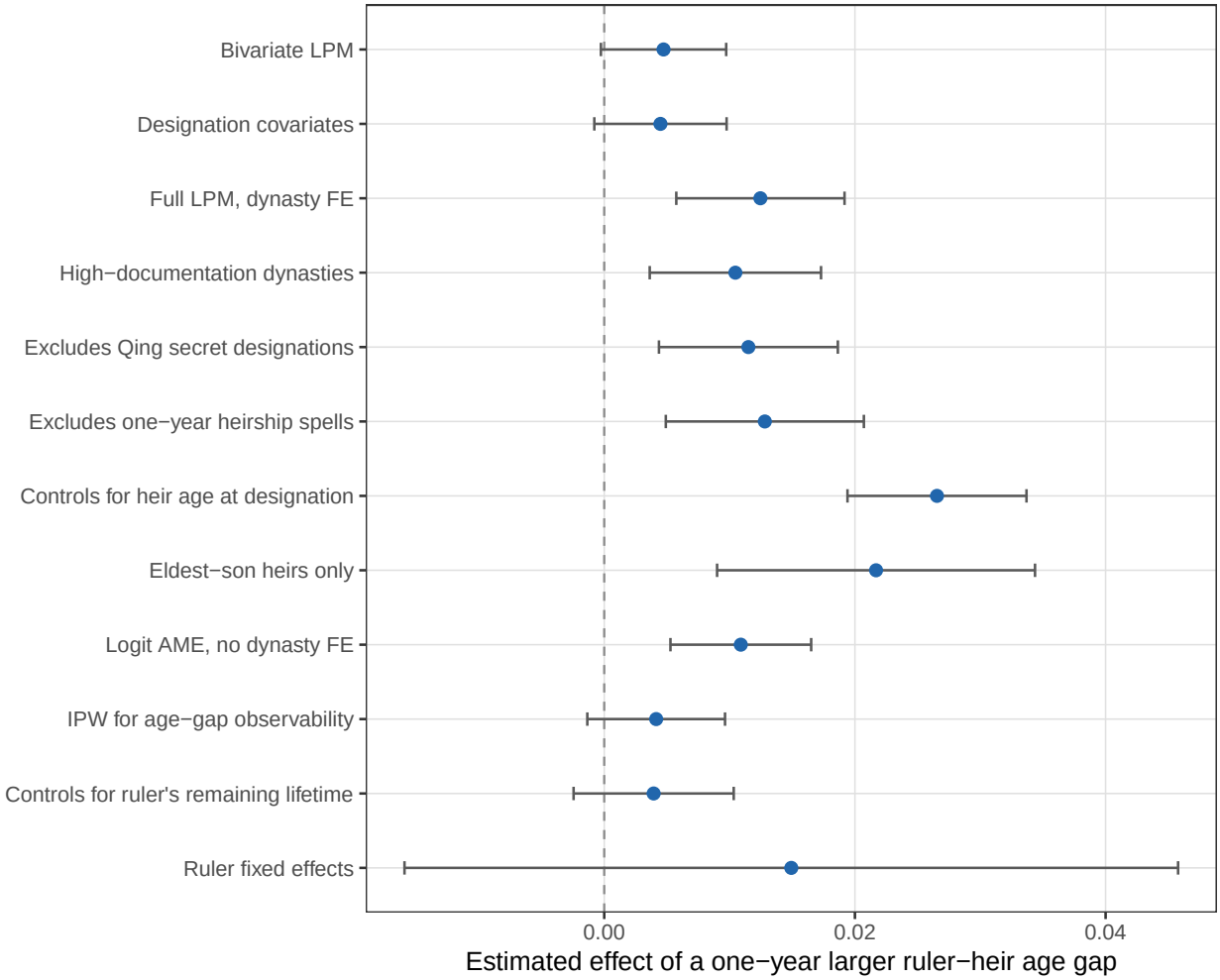

Figure 4: Specification Sensitivity of the Age-Gap Estimate

Two design-specific exclusions address cases in which the public waiting mechanism may be weaker. Qing rulers from Yongzheng onward used secret designation, so these cases did not expose heirs in the same way as ordinary crown-prince designation. Dropping them leaves the full fixed-effects estimate at 0.012 (SE 0.004). A second row drops heirship spells lasting one inclusive year or less, where there was little time for a public heirship to generate clients, expectations, and suspicion. The estimate is 0.013 (SE 0.004). These checks do not identify a new mechanism, but they show that the age-gap pattern is not an artifact of secret designation or last-minute succession arrangements. The logit average marginal effect without dynasty fixed effects is close to the full linear estimate, although that row is only a functional-form check; nonlinear models with many dynasty effects encounter separation in this sample.

The same table sets limits on that evidence. Reweighting observed cases by their predicted probability of having an age gap gives 0.004 (SE 0.003), close to the baseline designation-stage estimate but no longer conventionally significant. This is the paper's main missing-data diagnostic. It can adjust only for observed predictors of documentation, not for unrecorded source-selection processes. Ruler fixed effects yield 0.015 (SE 0.015). That is the cleanest available way to ask whether the same ruler treated closer-aged heirs more harshly, but only twenty-three rulers provide variation in both age gap and outcome, leaving little leverage for a within-ruler proximity test.

The sharpest mechanism diagnostic is the remaining-lifetime specification. Replacing ruler lifetime with the ruler's remaining lifetime after the heir's birth reduces the age-gap coefficient to 0.004 (SE 0.003). Remaining lifetime itself is negative, −0.009 (SE 0.004). This row should not be read as a simple control exercise. Remaining lifetime is algebraically tied to age gap and ruler lifetime, and ruler lifetime may itself be downstream of succession conflict. It is both a reparameterization and a possible post-treatment control. Its value is mainly diagnostic: any strong generational-rivalry claim would need to survive this conservative test, and the estimate does not. Exposure is more consistent with the data, but not uniquely identified.

A different pattern appears when the model holds constant the heir's age at formal designation. The age-gap estimate rises to 0.027 (SE 0.004). This specification is not a preferred causal model, because designation age is itself partly chosen by the court. It is nevertheless informative. Age gap and age at designation capture different parts of waiting: the former locates the heir in the ruler's life course, while the latter captures how politically mature the heir was when public heirship began. Their opposite movement is consistent with the paper's central distinction between exposure and immediate political capacity.

Appendix Table 9 adds potential confounders one at a time, including regnal year at

designation, maternal status, ruler-heir kin relation, number of sons, the ruler's own prior heir status, relation to the predecessor, violent accession, and recorded concubines. None absorbs the full-model age-gap coefficient. The last two rows add actual heirship duration and heir lifetime. Because both are realized after designation, they are mechanism diagnostics, not admissible pretreatment controls.

One alternative outcome asks whether the heir avoided political failure, grouping accession and natural death together. Its coefficient is 0.007 and only marginally significant. That attenuation is substantively sensible. Age gap bears most directly on completing the passage to the throne; an heir can avoid political destruction and still be outlived by the ruler.

An older-sister measure appears in Appendix Tables 10 and 11. It was collected as an indirect birth-order check for cases in which exact birth years are harder to recover. Daughters are rarely recorded in official histories; recovering even this limited sample required extensive use of excavated epitaphs and related family records. The exercise is included because a noisier indicator of later birth points in the same direction as the age-gap estimate while also showing the limits imposed by gender-biased documentation. The first-stage difference in age gap is only 3.5 years, and the regression estimates are positive but imprecise. For that reason, the measure is treated as exploratory evidence, not as an instrument, a substitute for age gap, or an independent mechanism.

These diagnostics narrow the interpretation. The association is positive in the documented sample and stronger in better-documented dynasties. IPW adjustment and the remaining-lifetime reparameterization both reduce the coefficient to about 0.004 and make it imprecise. The evidence therefore supports an exposure interpretation, but it does not establish a strong independent effect of same-generation rivalry.

4.3 Illustrative Replacement Sequences

Several replacement sequences show how the statistical pattern appeared in court politics. The cases are illustrative rather than representative, and they were chosen to span different political settings: Western Han and Tang were unified imperial dynasties; Wu, Southern Tang, and Former Shu belonged to divided orders. Across these settings, a formal title could make a prince the lawful future, while a long overlap with the incumbent gave that future time to become politically dangerous.

The classic case is Tang Taizong's treatment of Li Chengqian and Li Zhi. Taizong made Li Chengqian crown prince in 626. Chengqian was the eldest son and had a strong institutional claim, but his age gap with Taizong was only twenty-one years. Over seventeen years as crown prince, he acquired a household, followers, expectations, rivals, and a visible place

in court politics. In 643, after conflict involving rival princely networks and a failed plot, Taizong deposed him. Taizong then named Li Zhi, a younger son whose age gap was thirty years. Li Zhi had accumulated less independent political weight and succeeded in 649 (Liu et al. 1975; Ouyang and Song 1975).

The same sequence appears earlier in the Western Han. Emperor Jing first designated Liu Rong, whose age gap with the ruler was twenty years. Liu Rong was later removed from the succession, and Liu Che, with a thirty-two-year gap, became the successful heir. Under Emperor Wu, Liu Ju held the crown-prince position with a twenty-eight-year gap and became entangled in the witchcraft crisis that ended in his political destruction. The succession then moved to Liu Fuling, whose age gap with Emperor Wu was sixty-two years and who ascended as Emperor Zhao (Sima 1959; Ban 1962).

The pattern was not confined to the Han and Tang. In Wu, Sun Quan's succession passed through several sons. Sun He, with a forty-two-year age gap, was deposed after prolonged factional conflict; Sun Liang, whose age gap was sixty-one years, became the successor who reached the throne (Chen 1959). Southern Qi supplies a more cautious Southern Dynasties example. Xiao Changmao, designated under Emperor Wu with an eighteen-year gap, died before transfer; the succession then moved to Xiao Zhaoye, whose gap was thirty-three years and whose path to accession was shorter. Because the first ending was natural death, this case is not evidence of political removal. It is included only to show how an earlier heir could spend a longer period as the promised future before a later, larger-gap successor entered the line (Xiao 1972; Li 1975). In Southern Tang, Li Jing first designated his near-contemporary younger brother Li Jingsui, whose age gap was only four years. That arrangement later failed, and the succession eventually moved to Li Yu, a son whose age gap was twenty-one years and who reached the throne. Former Shu offers a similar Ten Kingdoms sequence: Wang Jian's designated heir Wang Yuanying failed, while the later and younger Wang Yan succeeded him (Xue et al. 1976; Ouyang 1974). These episodes differ in detail, but they share the same political structure. The closer or earlier heir had more time for formal status to become organization, expectation, and suspicion. The later or larger-gap heir faced a shorter route from designation to transfer. The cases therefore preserve the paper's institutional claim: designation mattered, yet it did not control the political accumulation that followed designation.

4.4 The Tang-Song Transformation and the Politics of Waiting

The Tang-Song transformation is more than a period split. It is the paper's main historical setting for thinking about why designation and protection could come apart. The long

transition is conventionally associated with the destruction of much of the medieval aristocracy, the erosion of hereditary military power, the expansion of examination-based recruitment, and the consolidation of a more bureaucratic monarchy (Naito 1992; Hartwell 1982; Bol 1992; Tackett 2014; Kuhn 2009). These changes did not occur in a single year, and 960 is only a serviceable dividing line. A date cannot carry the whole transformation. The historical claim is that the social and institutional supports around succession changed in ways that made the waiting problem more dependent on court-centered politics and, ultimately, on the incumbent's willingness to tolerate a visible future ruler.

Before that transition, succession often belonged to a wider coalition game. Aristocratic houses, founding generals, military governors, consort clans, regents, and palace commands could protect one prince or replace him with another. Their intervention could be violent and destabilizing, but it also meant that a designated heir's fate was not reducible to the ruler's personal tolerance. The post-Tang decline of hereditary aristocratic organization plausibly changed the composition of that game. Song officials could be formidable, and bureaucratic factions could shape imperial decisions, but their offices and careers were tied more closely to appointment and court standing (Hymes 1986; Chaffee 1995). A recognized heir stood in a paradoxical position: his claim was legible to a sophisticated bureaucracy, yet fewer corporate bodies could defend that claim independently of the throne.

This historical account yields a conditional expectation: where the incumbent dominates the coalition, the age relation between ruler and heir should be more informative; where organized elites can arbitrate succession, coalition alignments should overshadow it. Table 5 supports that expectation in the form the data can sustain. The designation-stage estimate is near zero before the Song and positive, larger, and statistically significant after the Song. The full-model estimate is positive in both periods but becomes much more precise in the Song-and-later sample. The available data therefore show a recurrent waiting problem and suggest that the age-gap mechanism became clearer after the political order moved toward bureaucratic monarchy. A single date dummy cannot measure aristocratic autonomy, military brokerage, bureaucratic dependence, or the changing organization of palace politics, and the interaction estimates should not be read as proof of a sharp institutional break in 960. The Tang-Song discussion remains central because it explains why a highly elaborated crown-prince institution could become increasingly vulnerable when protection depended less on hereditary coalition brokerage and more on survival inside a bureaucratic monarchy.

5 Beyond Imperial China: Succession as a Two-Stage Institution

Imperial China should not be treated as a template for a modern party-state, military regime, or electoral authoritarian regime. Its value lies in the clarity with which the historical record reveals a problem that other settings often conceal: a regime can possess a recognizable procedure for choosing the next leader while repeatedly destroying the people chosen by it. This observation changes how institutionalization should be measured.

Succession institutions perform at least four tasks. They define eligibility, select or identify a successor, protect that successor while the incumbent remains, and coordinate an actual transfer. Most comparative indicators capture the first and fourth: whether a rule exists and whether turnover is peaceful. The Chinese evidence draws attention to the middle. A rule may be excellent at narrowing eligibility and still poor at protecting its designated heir. Calling such a system either institutionalized or personalist loses the variation that matters.

The distinction sharpens the comparison with European monarchy. Primogeniture did more than identify an eldest son. As Kokkonen and Sundell (2014, 2020); Kokkonen, Møller and Sundell (2022) argue, it commonly selected someone young enough to wait and gave elites little reason to shop among alternatives. Where custom, family structure, and political organization made that waiting bargain credible, designation and protection reinforced one another. Imperial Chinese crown-prince institutions often achieved the focal-point benefit without the same degree of protection. A nominally similar rule can have different consequences depending on the political technology surrounding the waiting period.

The same distinction applies to contemporary authoritarian research without requiring a direct historical analogy. Parties, constitutions, vice presidencies, military councils, and ruling families can make entry by a successor more orderly (Brownlee 2007; Frantz and Stein 2017; Zeng 2020; Meng 2021). But peaceful entry and peaceful exit impose opposing demands. A successor needs enough authority to deter rivals after transfer; an incumbent needs assurance that this authority will not be used before transfer. Fixed terms, collective bodies, retirement guarantees, and organizational control of appointments can help reconcile the two. Where exit is discretionary and enforcement rests with the incumbent, early designation may simply lengthen the period in which the bargain can unravel.

A comparative dataset would begin with a *successor spell*, when a person is publicly designated or becomes the unambiguous second-in-command. The record would include changes in office, control over appointments or coercive organizations, public endorsements, removal, exile, death, accession, and the incumbent's eventual exit. Regimes with several failed designees before one successful transfer would no longer appear identical to regimes in

which the first designated successor inherited. Such data would connect the study of coups and turnover to the politics that precede them.

Successor spells would also permit event-history questions that the present dataset can only approach. The hazard of removal may be highest immediately after designation, when rivals test the appointment; in the middle, when the designated successor has accumulated power but the incumbent still expects to rule; or late, when impending transfer raises the cost of reopening succession. Zhou (2023) derives a middle-period danger from the changing incentives of ruler and successor. Testing that claim requires dates for changes in office and influence, along with final endings. It also requires competing-risk models that distinguish accession, ordinary death, removal, and regime collapse.

The protection function can then be measured directly through ratification rules for removal, the authority of royal councils over eligible successors, the designated successor's command of coercive organizations, the fixity of the transfer date, and credible commitments against post-transfer punishment. These features should condition whether early designation produces orderly preparation or an extended contest. They also offer a way to compare unlike institutions without treating crown princes and party deputies as identical offices.

Successor-centered data would reconnect succession research to broader work on authoritarian tenure. Term limits and retirement arrangements are often studied from the incumbent's perspective (Baturo 2014; Helms 2020). The successor's perspective reveals the mirror image: a credible exit date shortens uncertain waiting, while indefinite tenure turns a nominal promotion into an open-ended risk. Political time, in this sense, is a property of the bargain between officeholders, extending beyond the number of years one leader has ruled.

In hereditary systems, age gap measures one form of political time. In party regimes, more relevant distances may include administrative seniority, military rank, cohort, network overlap, control of a territorial base, or expected career horizon. The general construct is relational: the ease with which elites can treat the designated successor as a governing alternative in the present, together with the length of time he must coexist with the incumbent. The exposure channel likewise travels. A short, enforceable timetable to transfer creates a different bargain from an indefinite appointment, even when the formal title is identical.

The project therefore addresses a central question in authoritarian politics, beyond the particularities of Chinese history. The key issue is which part of succession institutions institutionalize. Selection without protection can reduce uncertainty about the future and heighten insecurity in the present. A theory that begins only at leadership turnover misses that tradeoff.

The argument does not require direct analogies between emperors and contemporary political leaders. It identifies observable features that travel across settings: the timing of

designation, the authority attached to the successor, the overlap between incumbent and heir networks, control over the waiting interval, and the fate of designees who never reached office.

6 Conclusion

Succession was not a single institutional event. It required courts to name an heir, keep him in place, and transfer power. Imperial Chinese courts often succeeded at the first task while failing at the second. Among 259 designation episodes, fewer than 51 percent ended in accession, and ninety ended in deposition, killing, or disappearance. A ruler-centered history obscures these failed futures; an heir-centered dataset makes them the object of analysis.

The evidence points to a limited but substantively meaningful relationship between political time and heirship survival. In the pre-lifetime specifications, a ten-year larger ruler–heir age gap is associated with roughly four to eight percentage points higher accession probability. The association is stronger in better-documented and Song-and-later samples, and the Song-and-later estimate survives the exclusion of Qing secret-designation cases and one-year heirship spells. It weakens, however, under IPW adjustment and remaining-lifetime reparameterization. Age gap should therefore be read as evidence of exposure during the waiting period, not as a clean causal estimate of interpersonal rivalry.

A remaining limitation is selection into designation. Age gap was not randomly assigned. Rulers could choose or retain heirs with particular age profiles for political reasons, including the desire to delay succession, to placate a consort clan, or to avoid empowering an adult rival. Dynasty fixed effects absorb time-invariant cross-dynasty differences, but they cannot rule out strategic selection within dynasties. The estimates should be read as conditional associations among designated heirs, not as causal effects of age gap on succession.

Even this qualified result matters for institutional theory. Succession rules can coordinate elites at the moment of transfer and still leave the designated successor exposed beforehand. The age of a ruler relative to an heir matters because it structures how long both actors must occupy an unsettled bargain. A long overlap gives formal status time to generate clients, administrative experience, and political weight; it also gives the incumbent more time to reconsider. A short overlap can make patience more credible. The lesson concerns institutional incompleteness: rules can define the lawful successor, while power continues to accumulate beyond the formal rule during the waiting period.

The same caution applies to formal status. Eldest-son and maternal status do not consistently predict accession among people already selected as heirs. That pattern does not make primogeniture politically unimportant; selection into the dataset is itself evidence of its force. It shows that legitimacy at designation did not amount to protection during heirship.

Nor does the paper claim that designation was a net burden relative to remaining unnamed. The data contain no comparable pool of plausible but undesignated claimants. Within the population of named heirs, institutional entitlement was an unreliable shield.

The next empirical step is to collect successor spells as well as eventual leaders: when designation occurred, what authority accompanied it, how the designated successor's network changed, who controlled removal, and how the spell ended. Comparable records from other monarchies, ruling parties, and military regimes would show when designation solves both selection and protection and when it relocates conflict to an earlier date. Succession rules operate through time: the person chosen for the future must survive the politics of the present.

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A Additional Specification and Measurement Checks

Appendix Table 8 reports the full set of specification-sensitivity checks summarized in the main text. Appendix Table 9 adds possible confounders one at a time. These tables preserve the audit trail while keeping the main empirical discussion focused on the diagnostics that most directly bear on archival selection, exposure, and proximity.

B Exploratory Older-Sister Measurement Check

The older-sister measure was collected to check the birth-order logic when exact birth years were difficult to recover. It is a noisy auxiliary measure, not an instrument or an equal substitute for age gap. Daughters were recorded unevenly; the indicator contains no information about the sister's age; and it mixes the ruler's reproductive history with family size and source survival. The analysis is therefore exploratory.

Table 10: Exploratory Older-Sister Check for Age Gap

Has older sister	N	Mean age gap	Median age gap	Succession rate
No	75	21.915	20.000	0.440
Yes	83	25.444	25.000	0.675

The raw pattern runs in the expected direction. Heirs with a recorded older sister have an average age gap of 25.4 years, against 21.9 years among those without one, and a higher accession rate. Among the 140 episodes with both measures, the first-stage difference in age gap is 3.5 years (SE 2.1, $p = 0.092$). The association is weak and does not validate the proxy.

Table 8: Full Specification Sensitivity of the Age-Gap Estimate

Specification	Estimate	SE	95% CI	N
Bivariate LPM	0.005*	(0.003)	[-0.000, 0.010]	192
Designation covariates	0.004*	(0.003)	[-0.001, 0.010]	185
Designation covariates plus dynasty FE	0.008**	(0.003)	[0.001, 0.014]	185
Full LPM, dynasty FE	0.012***	(0.003)	[0.006, 0.019]	184
High-documentation dynasties	0.010***	(0.003)	[0.004, 0.017]	92
Excludes Qing secret designations	0.012***	(0.004)	[0.004, 0.019]	177
Excludes one-year heirship spells	0.013***	(0.004)	[0.005, 0.021]	153
No natural deaths	0.012***	(0.004)	[0.005, 0.019]	161
SE clustered by dynasty	0.012***	(0.003)	[0.005, 0.019]	184
SE clustered by ruler	0.012***	(0.004)	[0.005, 0.020]	184
Century fixed effects	0.012***	(0.003)	[0.007, 0.017]	184
Dynasty FE plus time trend	0.012***	(0.003)	[0.006, 0.019]	184
No dynasty FE, period control	0.011***	(0.003)	[0.006, 0.016]	184
Controls for heir age at designation	0.027***	(0.004)	[0.019, 0.034]	176
Controls for ruler's remaining lifetime	0.004	(0.003)	[-0.002, 0.010]	184
IPW for age-gap observability	0.004	(0.003)	[-0.001, 0.010]	185
Controls for heir rebellion	0.012***	(0.003)	[0.005, 0.019]	184
Original gap variable reversed	0.012***	(0.003)	[0.006, 0.019]	184
Excludes negative age gaps	0.014***	(0.004)	[0.006, 0.023]	181
Trims age-gap tails	0.015***	(0.005)	[0.006, 0.025]	174
Drops dynasties with fewer than 3 heirs	0.012***	(0.003)	[0.005, 0.018]	162
One record per ruler-heir pair	0.012***	(0.003)	[0.006, 0.019]	182
Eldest-son heirs only	0.022***	(0.006)	[0.009, 0.034]	105
Son-line heirs only	0.018***	(0.005)	[0.008, 0.027]	159
Ruler fixed effects	0.015	(0.015)	[-0.016, 0.046]	185
Outcome: avoids political failure	0.007*	(0.004)	[-0.001, 0.015]	184
Logit AME, no dynasty FE	0.011***	(0.003)	[0.005, 0.017]	184
Probit AME, no dynasty FE	0.011***	(0.003)	[0.006, 0.016]	184
Quadratic age gap, ME at mean	0.013***	(0.004)	[0.006, 0.020]	184

Notes: Entries report age-gap coefficients from linear probability models unless otherwise specified. Logit and probit rows report average marginal effects without dynasty fixed effects. Clustered rows use cluster-level t inference. The quadratic row reports the marginal effect at the sample mean. See Table 7 for definitions of the main diagnostics. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 9: Additional Covariate Robustness

Specification	Estimate	SE	95% CI	N
Controls for ruler tenure	0.012***	(0.003)	[0.005, 0.019]	184
Controls for ruler regnal year at designation	0.012***	(0.004)	[0.004, 0.019]	173
Controls for mother's later elevation	0.013***	(0.003)	[0.006, 0.019]	184
Mother-status fixed effects	0.012***	(0.003)	[0.005, 0.019]	184
Ruler-heir relationship fixed effects	0.012***	(0.004)	[0.005, 0.020]	184
Controls for ruler's number of sons	0.012***	(0.003)	[0.005, 0.019]	178
Controls for ruler's own heir status	0.013***	(0.003)	[0.006, 0.020]	178
Predecessor-relation fixed effects	0.015***	(0.004)	[0.008, 0.023]	176
Controls for ruler's violent accession	0.012***	(0.003)	[0.005, 0.019]	178
Controls for ruler's concubines	0.012***	(0.003)	[0.005, 0.019]	176
Overcontrol: heirship duration	0.012***	(0.004)	[0.005, 0.019]	176
Overcontrol: heir lifetime	0.016***	(0.003)	[0.010, 0.022]	179

Notes: Entries report the age-gap coefficient from linear probability models. The ruler-level rows using sons, the ruler's own heir status, predecessor relation, violent accession, and concubines merge the Chinese Emperor database by ruler personal name and accession year. The last two rows are post-designation overcontrols and serve as diagnostic checks; they are not preferred causal specifications. HC1 standard errors are used. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 11: Exploratory Older-Sister Check and the Probability of Succession

	Full	No deaths	Pre-Song	Song and later	Eldest
	(1)	(2)	(3)	(4)	(5)
Older sister	0.175	0.124	0.103	0.361*	0.122
	(0.117)	(0.127)	(0.157)	(0.202)	(0.175)
Ruler lifetime	-0.004	-0.001	-0.002	-0.005	-0.009*
	(0.004)	(0.004)	(0.006)	(0.005)	(0.005)
Competitors	-0.002	-0.002	-0.002	-0.003	0.000
	(0.009)	(0.010)	(0.012)	(0.014)	(0.011)
Eldest son	-0.166	-0.114	-0.186	-0.129	
	(0.110)	(0.120)	(0.149)	(0.253)	
Mother empress	0.093	0.060	0.117	0.058	0.041
	(0.109)	(0.115)	(0.153)	(0.197)	(0.156)
Dethroned empress	-0.187	-0.300	-0.186		-0.098
	(0.222)	(0.218)	(0.238)		(0.295)
Powerful minister	-0.143	-0.274*	-0.181	0.070	-0.034
	(0.139)	(0.147)	(0.176)	(0.391)	(0.184)
Unified regime	0.147	0.104	0.024	0.487	0.420**
	(0.220)	(0.269)	(0.269)	(0.294)	(0.187)
Constant	1.122***	1.066***	1.101***	0.416	1.286***
	(0.229)	(0.239)	(0.342)	(0.459)	(0.312)
Dynasty fixed effects	Yes	Yes	Yes	Yes	Yes
Sample	All	No deaths	Pre-Song	Song and later	Eldest sons
Observations	148	130	99	48	85
R^2	0.337	0.359	0.377	0.320	0.447
Adjusted R^2	0.034	0.003	-0.035	0.031	0.012

Notes: Linear probability models. HC1 robust standard errors in parentheses. The older-sister indicator is an exploratory measurement check and should not be treated as an instrument or substitute for the age gap. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 11 points in the same direction but remains noisy. All five coefficients are positive, but the full estimate is 0.175 with an SE of 0.117. Only the estimate for the Song and later reaches the ten-percent level, in a sample of forty-eight complete cases. There is no basis for treating that isolated result as confirmation of a period-specific mechanism. That estimate is nevertheless consistent with the possibility that better documentation of imperial daughters after the Song makes the birth-order logic more visible. The interpretation is speculative, but it suggests that better data on female kin could strengthen the age-gap pattern instead of overturning it. The sister variable is therefore best kept as a measurement check: a noisier indicator of later birth that points in the same direction as the age-gap pattern.

C Database Appendix

This appendix documents the two datasets used in the paper. Both were manually collected by the authors and research assistants from standard dynastic histories, transmitted historical classics, excavated epitaphs and tomb inscriptions, and related materials. The principal source base includes the Twenty-Four Histories in the Zhonghua Book Company punctuated-and-collated editions, the *Zizhi tongjian*, the *Qing shi gao*, and published epitaph collections. The Crown Successor database is heir-centered; the Chinese Emperor database is ruler-centered. Repeated designations and repeated accessions are coded as separate observations when they created substantively separate political episodes.

The codebooks below report the variables used in the supplied data files, their definitions, coding rules, and non-missing counts. Some categorical variables retain the original hand-coded categories. For the regression analysis, we use binary versions of the variables used in the models: successful succession, eldest-son status, mother was empress, powerful-minister environment, unified regime, and older-sister status.

Table 12: Crown Successor Database: Variable Definitions

Variable	Definition	Coding or notes	N
`id`	Unique observation identifier.	Integer.	259
`dynasty`	Historical regime name recorded in Chinese historiography.	Text.	259
`successor`	Name of the designated heir.	Text.	259
`emperor`	Name of the incumbent ruler who made or sustained the designation.	Text.	259
`year_of_birth`	Birth year of the designated heir.	Year; BCE years are negative.	192
`birth_year`	Birth year of the incumbent ruler.	Year; BCE years are negative.	240
`year_of_death`	Death year of the designated heir.	Year; BCE years are negative.	245
`death_year`	Death year of the incumbent ruler.	Year; BCE years are negative.	258
`year_of_heir`	Year in which the heir was designated; when missing, figures use heir birth year for temporal placement.	Year; BCE years are negative.	245
`year_of_end_crown_prince`	Year in which the heirship ended, including accession, death, deposition, or disappearance.	Year; BCE years are negative.	255
`ascend_to_the_throne`	Binary outcome equal to one if the designated heir ultimately reached the throne.	0 = no, 1 = yes.	259

Variable	Definition	Coding or notes	N
successor_ending	Three-category outcome: natural death before succession; deposition, killing, or disappearance; successful succession.	0 = natural death, 1 = political failure, 2 = succession.	259
number_potential_competitors	Number of plausible competitors around the designated heir.	Count.	258
identity_eldest_son	Binary indicator for whether the heir was the ruler's eldest son or eldest-line son.	0 = no, 1 = yes.	256
identity_successor	Categorical relationship between ruler and heir, retained from the hand-coded database.	Categorical code.	256
empress_successor_mother	Binary indicator for whether the heir's mother was empress.	0 = no, 1 = yes.	239
identity_successor_mother	Categorical status of the heir's birth mother.	Categorical code.	239
event_crown_empress	Indicator for whether the heir's mother was later elevated to empress.	0 = no, 1 = yes.	259
event_dethrone_empress	Indicator for whether the empress or relevant maternal status was deposed.	0 = no, 1 = yes.	259
event_reign_in_the_court	Indicator for the presence of powerful ministers or regents during the waiting period.	0 = no, 1 = yes.	259
event_successor_rebels	Indicator for whether the heir rebelled against the ruler.	0 = no, 1 = yes.	259
unification	Indicator for whether the regime was a unified empire or a fragmented polity.	0 = no, 1 = yes.	259
duration	Length of the heirship interval where recoverable.	Years.	245
life_crown_prince	Heir's lifetime.	Years.	187
tenure	Incumbent ruler's tenure.	Years.	259
life_emperor	Incumbent ruler's lifetime.	Years.	239
gap_year	Original signed age-gap variable in the database; the analysis reverses the sign so larger values mean a larger ruler-heir age gap.	Years.	192
older_sister	Indicator for whether the heir had an older sister.	0 = no, 1 = yes.	158
number_older_sister	Number of older sisters, where recoverable.	Count.	46
newdynasty	Standardized dynasty label used for fixed effects.	Text.	259

Table 13: Chinese Emperor Database: Variable Definitions

Variable	Definition	Coding or notes	N
ID	Unique observation identifier.	Integer.	383
regime	Historical regime name.	Text.	381
emperor	Conventional title of the ruler.	Text.	379
name	Personal name of the ruler.	Text.	383
temple_name	Temple name where applicable.	Text.	303
year_of_birth_year	Birth year of the ruler.	Year; BCE years are negative.	321
year_of_death	Death year of the ruler.	Year; BCE years are negative.	379
year_of_ascension	Year of accession; repeated accessions are separate observations.	Year; BCE years are negative.	383
year_of_abdication	Year of abdication, deposition, or death.	Year; BCE years are negative.	383
appoint_an_heir	Whether the ruler appointed a designated heir.	0 = no, 1 = yes.	334
frequency_of_ appointing_an_heir	Number of heir appointments during the reign.	Count.	332
the_heir_apparent_ assumes_the_throne	Whether the ruler had been the previous ruler's designated heir.	0 = no, 1 = yes.	375
ascend_to_the_throne_ through_patricide. fratricide	Whether the ruler took power through patricide or fratricide.	0 = no, 1 = yes.	383
relationship_with_the_ previous_ruler	Kinship relation with the previous ruler.	1 father-son, 2 grandfather-grandson, 3 uncle-nephew, 4 brothers, 5 other kin, 6 unrelated.	381
appoint_the_empress	Whether the ruler appointed an empress.	0 = no, 1 = yes.	346
frequency_of_ appointing_the_empress	Number of empress appointments.	Count.	338
frequency_of_ appointing_the_ empress2	Alternative count of empress appointments used for cross-checking.	Count.	337
number_of_concubines	Number of recorded consorts and concubines.	Count.	338
number_of_sons	Number of recorded sons.	Count.	355
number_of_sons2	Alternative son count used for cross-checking.	Count.	349

Variable	Definition	Coding or notes	N
`abdication_method`	Categorical mode of leaving the throne.	0 natural death; other codes distinguish abdication, murder, deposition, forced retirement, suicide, war death, and accident.	383