Time is Power: The Non-Institutional Sources of Stability in Autocracies*

Scott Abramson[†]   Carlos Velasco Rivera[‡]

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Abstract

Is personal power hereditable in autocracies? Given the discretion that autocrats often have to alter the formal rules of the game, personal power is key for understanding political development in non-democracies. However, recent scholarship has largely ignored this question. To fill this gap we exploit the random timing of natural deaths for a set of European monarchs to show that longer tenures increase a monarch's probability of having a son or brother as a successor and decrease the probability his successor faces deposal and parliamentary constraints. We show that the effect of tenure on successor deposal is as least as large as the one associated with succession orders – an institution that has received recent attention in the literature. Our results are consistent with an account in which leaders accumulate political power the longer they are in office, which determines the stability of and institutional development in autocracies.

Word Count: 8,348 words

...the first and fundamental problem which evidently confronts charismatic domination, if it is to be transformed into a permanent institution, is precisely the question of the succession to the prophet, hero, teacher, or party leader. It is precisely at that point that charisma inevitably turns on to the path of statute and tradition.

- Max Weber, 1922

1 Introduction

Is personal power hereditable in autocracies? That is, are leaders able to consolidate their hold on office and pass their accumulated power on to successors? Given the discretion autocrats often have to alter formal institutional rules, understanding how personal power affects political development is crucial. However, recent scholarship on non-democracies has frequently ignored this question. Instead this literature has been dominated by an institutionalist perspective. A large number of studies have linked institutions like parliaments (Folch 2003, Gandhi and Przeworski 2006, 2007, Svolik 2009, Boix and Svolik 2013, Wright 2008, Wright and Escriba-Folch 2012), parties (Geddes 2006, Greene 2007, Magaloni 2008, Brownlee 2007, 2008, Gehlbach and Keefer 2011, Wright and Escriba-Folch 2012), and elections (Lust-Okar 2006, Cox 2009, Blaydes 2010, Fearon 2011, Miller 2012, 2013) to the fate of autocratic regimes, leaders survival, and patterns of succession.

We argue that this framework understates the role of non-institutional sources power and thus provides an incomplete picture of political development in autocracies. We build on a literature on political dynasties in democratic settings that has found that long-tenured office holders are more likely to have relatives who later serve in office (Dal Bo, Dal Bo and Snyder 2009, Querubin 2010, Rossi 2009). These studies argue that while in office politicians accumulate political capital which they then bestow on to their relatives, allowing future generations access to power and fostering the establishment of political dynasties. If

in societies where leaders are bound by the rule of law elected officials use their time in office to accumulate and transfer political power to their successors, we argue that similar mechanisms must certainly exist in autocratic regimes where *de jure* politics play a back seat to the *de facto* exercise of power.

To fill this gap we exploit the random timing of natural death for a set of European monarchs to show that a longer tenure increases a monarch's probability of having a son as their successor and decreases the successor's probability of facing deposal and parliamentary constraints. To gauge the relative magnitude of this effect we show that the effect of tenure on successor deposal is as least as large as the one associated with primogeniture, a formal rule governing succession in autocratic regimes that has received recent attention as a cause of autocratic stability (Tullock 1987, Kurrild-Klitgaard 2000, Kokkonen and Sundell 2014). Our results are consistent with an account in which leaders accumulate power the longer they are in office, power which they are then capable of transmitting across generations. Substantively, these results show that personal power, a mechanism that has been under-emphasized, is at least as important as institutional explanations that have recently monopolized the attention of scholars.

2   Theoretical Motivation

A burgeoning literature in comparative politics and political economy has found that institutions like legislatures (Folch 2003, Gandhi and Przeworski 2006, 2007, Svolik 2009, Boix and Svolik 2013, Wright 2008, Wright and Escriba-Folch 2012), political parties (Geddes 2006, Greene 2007, Magaloni 2008, Brownlee 2007, 2008, Gehlbach and Keefer 2011, Wright and Escriba-Folch 2012), elections (Lust-Okar 2006, Cox 2009, Blaydes 2010, Fearon 2011, Miller 2012, 2013), and succession orders (Tullock 1987, Kurrild-Klitgaard 2000, Kokkonen and Sundell 2014) emerge functionally in order to solve problems inherent to the survival and

succession of leaders in authoritarian regimes.[1] In our view, these accounts are frequently incomplete in that they often take institutions as exogenous and do not seek to understand the causes giving rise to them in the first place.

Moreover, in seeking institutional explanations for autocratic political development, this literature has left less easily measurable - non-institutional - sources of political stability at the wayside. We suggest that these sources of power, long emphasized in comparative politics (Bachrach and Baratz 1962, Berle 1967, Lukes 1974, Mann 1986, Wedeen 1999), deserve greater attention from formal and empirical scholars - not only because they have direct effects on political outcomes of interest, but because they are a fundamental cause of the institutions the extant literature views as crucial.

For instance, parliaments (and authoritarian legislatures more generally) are commonly viewed as bodies which foster norms of collective action against dictators. In this way, they are believed to constrain leaders from expropriating or acting in a capricious manner and thereby promote stability and economic growth (North and Weingast 1989, Weingast 1997, Myerson 2008). However, we follow a literature that has questioned whether these institutions have substantial independent effects. Stasavage (2002, 2003, 2007) for example, views parliaments as only having effects in so far as they are constituted by groups with preferences dissimilar to those of the leaders on which they are supposed to place a check. Abramson and Boix (2015) go farther and explicitly view parliaments in early-modern Europe as mere institutional reflections of the underlying power of merchant oligarchies.

This sentiment is echoed in the historical literature. For example, Pincus (2009), in his prominent history of the Glorious Revolution, demonstrates that England prior to the events of 1688 was already a modern society with an expanding capitalist economy, increasing urbanization and growing trade. Rising merchant interests, the opponents of James II, looked

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[1]See Gandhi (2008) & Svolik (2012) for general overviews. In a similar vein, a nascent literature on the effects of institutions which foster public deliberation, largely focusing upon the Chinese case, has made similar claims. On this see, He and Warren (2011), Truex (2014), Chen and Xu (2013).

to the Dutch Republic rather than to the French monarchy for political inspiration (Pincus 2009, p. 7-8), and imposed parliamentary constraints on future leaders. That is, the English parliament, an ideal-typical case frequently used as evidence in favor of the constraining effects of parliamentary institutions (North and Weingast 1989), arose because those who opposed the crown were sufficiently powerful.

The possibility that institutions reflect political power is particularly problematic for accounts which link them to the fate of leaders and their successors. In the case of rules governing the succession in autocracies, for example, one may find that countries with primogeniture (i.e. where the designated successor to the throne is eldest child of a monarch) exhibit lower rates of leader deposal (Kokkonen and Sundell 2014). This, however, does not mean that succession orders are directly responsible for the fate of leaders. One alternative is that as monarchs become more capable of consolidating their rule, they are more capable of selecting institutions that designate legitimate successors and less likely to have successors who experience a violent removal from power.

Indeed, an emerging literature on political dynasties in democratic settings suggests that this is a strong possibility. Dal Bo, Dal Bo and Snyder (2009), Querubin (2010), and Rossi (2009) have found that long-tenured office holders are more likely to have relatives who later serve in office. These studies argue that while in office politicians accumulate political capital which they then bestow on to their relatives, allowing future generations access to power, and fostering the establishment of political dynasties. A feature of democratic societies, however, is that leaders are constrained by the rule of law. If even in these places leaders are found to use their time in office to accumulate and transmit political power, similar mechanisms are likely to be at play in autocracies where the rule of law is less likely to bind. In these regimes the longer leaders are in power the more opportunities they have to do away with their adversaries, place allies in key positions, and groom their chosen successors. As a result we should observe that longer tenures should lead to more stability, less frequency

of institutional checks on leaders, and a higher probability of observing close relatives as successors.

In this paper we exploit the timing of natural deaths within a set of European monarchs to quantify the extent to which leaders are able user their time in office to affect the fate of their successors. Based on the preceding discussion, we should expect, all else equal, successors of leaders with longer tenures to be closely related to their predecessors, exhibit lower rates of deposal, and less frequently constrained by parliaments. At the heart of our argument is the insight of historian William Chester Jordan in his discussion of Capetian success. The Capetians, founders of a regime that would become the paragon of absolutism, "...were successful in part because they survived at all, let alone for such a long time, and managed to pass on the kingship to their eldest sons" (Jordan 2002, p. 54). In other words, the Capetians were able to translate time in office into power.

More generally, our argument is consistent with the empirical conclusion drawn by both Geddes (1999) and Hadenius and Teorell (2007) as well as the game theoretic account of Svolik (2009), all of which show that across formal institutional arrangements, autocracies of all types - personalist, military, single party, and hybrid regimes alike - can, given sufficient time, become consolidated against threats to stability.

Of course, we face a selection problem too. We may expect those leaders with longer tenures to have a better political acumen to rule in autocracies. However, as discussed in the next section, we resolve this problem by exploiting the timing of natural deaths of monarchs to estimate the effect of leader tenure on a number of outcomes of interest.

3   Data and Empirical Strategy

The data we analyze in this paper come from the records of rulers documented in the volume *Dynasties of the World* (Morby 2002). This volume lists the chronology of rulers

across monarchies in several countries from antiquity to the present day. For each country the source provides information on: a ruler's year of ascent and descent from power; whether the ruler was deposed or abdicated; whether the ruler is a son or brother of a predecessor; and the royal house to which a ruler belonged. This source has been analyzed to study the length of tenure of rulers in the Christian versus the Muslim world (Blaydes and Chaney 2012), and the effect of succession orders on leader deposal in pre-modern Europe (Kokkonen and Sundell 2014).

Additionally, we use the dataset built by Abramson and Boix (2015) to measure the presence of parliamentary constraints on executives. Formally, they define a parliament as a "non-executive body (i.e. a body that fulfills legislative and sometimes judicial functions as opposed to or in addition to strict executive tasks) formed by a plurality of members" and which is "chosen through procedures (elections or lottery) not directly controlled by the executive (Abramson and Boix 2015, p. 10-11)." For the years between 1200 and 1800, these data measure the annual presence of traditional territorial assemblies such as the British parliament, the French General Estates or the Catalan Corts, and permanent local councils like Genoa's Maggiore Consiglio or Florence's executive committee. All of these institutions were designed to constrain monarchs.

In combination, we use these data to study the impact of leader duration on the ability of rulers to pass on power to close relatives, on political stability, and the presence of constraining institutions. To study these questions, we restrict our analysis to the set of leaders who died of natural causes in office. Based on this population, we exploit the timing of leader's natural death as natural experiment. We argue that conditional on dying naturally in office, the timing of a leader's death is independent of political outcomes such as the overall stability of a political regime and his ability to designate his successors.[2] Focusing

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[2]Papers exploiting similar identification assumptions include Etebari, Horrigan and Landwehr (1987), Jones and Olken (2005), Behn et al. (2006), Faccio and Parsley (2009)

on this population allows us to assess the impact of a leader's tenure on his ability to pass on power to close relatives and on the political fortune of his successors.

We focus on the period 505 BC to 1900 AD and classify a leader as having died in office if there is no indication of deposal or abdication for a ruler as listed in Morby (2002). Based on this sample we then construct *Tenure* - our main independent variable of interest - as the length (in years) of a leader's reign. To measure our outcomes of interest, we rely on the information provided in *Dynasties of the World* to determine for each leader in the sample whether he had a son or a brother as a sucessor and whether his successor was overthrown.

Still, the proposed empirical strategy and the sources of our data give rise to several concerns. We account for them as follows. First, if there are heritable traits that explain both a ruler's longevity and fitness to lead we could be capturing the effect of a genetic component. In other words, more physically vigorous leaders might be more capable of transferring authority across time and also of living longer.[3] To account for this we can condition on the family-line of each leader, thereby estimating effects of tenure from within-family changes. So, if there is a heritable component, we can account for it by comparing units within their own family tree. Similarly, there may be country specific traits that explain both leader longevity and future political stability.[4] In the same way, we condition on country specific factors, and our results do not substantively change.

Second, a common time trend in both health outcomes and political stability might confound our estimates. If both leader tenure and political stability coevolve because, for example, limits to medical knowledge, economic constraints, or the disease environment covaried temporally with political stability, our results may be capturing these trends and

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[3]For example, a substantial literature on height, a highly heritable trait, finds that taller men are more likely to obtain leadership positions (Stogdill 1948, Judge and Cable 2004) and be viewed as better leaders (Kurtz 1969, Hensley 1993, Zebrowitz 1994, Young and French 1996). Lindqvist (2012) finds that 50 % of the correlation between height and leadership positions is explained by the correlation between height and cognitive and non-cognitive abilities.

[4]For example poor and unequal societies exhibit high levels of mortality (Preston 1975, Marmot 2005, Beckfield 2004) and political instability (Fearon and Laitin 2003, Cramer 2003, Boix 2008).

not a true effect of leader tenure. One way we account for this is to compare leaders that came to power in the same time period. When we include time effects, removing whatever time specific heterogeneity might confound our results, none our estimates change.

A further complication may arise from systematic variation in the age at which leaders come to power. Leaders who come to power at a young age have a greater opportunity to sire offspring, consolidate power, and pass it on to future generations within a regime. In order to account for this we condition on the age at which a leader comes to power, thus comparing leaders who come to power at the same age but who die at different ages. No results change substantively when we do this.

Finally, one might be concerned that we systematically miscode natural deaths. For example, leaders may exit power by successful coup but the historical accounts upon which we rely could record this event as an accidental or natural death. If this were the case our results might be confounded. To guard against this concern we replicate all of our results using the dataset constructed by Kokkonen and Sundell (2014). The advantage of this data is that the authors checked across several sources the manner in which leaders exited power. The consequence is a slightly different coding to that of Morby (2002). Besides a few small discrepancies in the coding of deposals, the main difference between theirs and our dataset is the former's shorter time period covered in the sample (1000 AD to 1800 AD vs 505 BC to 1900 AD) and considerably fewer countries in their analysis (42 vs. 106). Nevertheless, our results remain unchanged when analyzing this alternative dataset.[5]

4 Choosing a Successor

In this section we focus on the set of leaders who died in office during the period 505 BC to 1900 AD and estimate the impact of tenure on their ability to pass on power to close

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[5]Results using the Kokkonen and Sundell (2014) sample are reported in the appendix.

relatives. We focus on two outcomes. First we examine the effect of a ruler's tenure on the probability that a son inherits leadership from their father. Then, because not all fathers have sons, we treat as the outcome the probability that either a son or a brother inherits power. We find that leaders who were longer in power were more likely to have close relatives (son or brothers) as successors. These results indicate that outcomes observationally akin to succession rules can be generated by wholly non-institutional causes.

To measure the effect of tenure on our outcomes of interest we focus upon the set of rulers who in this period died naturally in office, exploiting the random variation induced by the timing of death to assess how tenure impacts the ability of rulers to appoint their chosen successors. To assess our claim that leaders who survive longer in power will be more capable of ensuring successors who are close to them, we estimate a series of mixed-effects logistic regression models, treating as the outcome a binary indicator for whether a leader's successor is his son or whether it is his son or brother, respectively. Formally, we estimate the following model:

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\begin{aligned}
Y_i &\sim \text{Bernoulli}(p_i) \\
p_i &= \text{logit}^{-1}(\beta_0 + \text{Tenure}_i\beta_1 + X_i^\top\beta_2 + \phi_t + \alpha_c + \gamma_r) \\
\phi_t &\sim \mathcal{N}(0, \tau_t^2) \\
\alpha_c &\sim \mathcal{N}(0, \tau_c^2) \\
\gamma_r &\sim \mathcal{N}(0, \tau_r^2)
\end{aligned}
\tag{1}
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where Y_i is the main outcome of interest and is operationalized as a binary indicator expressing our outcomes of interest. We consider the following outcomes: whether a leader's successor is his son and whether it is his son or brother. We model each of these outcomes as a Bernoulli process governed by a leader-specific probability p_i. We model p_i as a function of a leader's tenure in office (Tenure_i), a set possible confounders (X_i), and century (ϕ_t), country (α_c), and house (γ_r) random effects under an inverse logit specification. The ran-

dom effects are normally distributed with mean zero and variance τ_t, τ_c, and τ_r respectively. The random effects essentially control for heterogeneity one may expect to find across time, countries, and specific royal houses.

Columns (1) - (6) in Table 1 report the results from this analysis, treating the outcome as the existence of a son as successor. Across all specifications we find that a leader's tenure has a positive impact on his ability to pass on power to his son. Importantly, this effect is robust first to the inclusion of century, country, and house random effects (columns 2-4). A concern one may have is that the relationship between leader tenure and the probability of passing power to a son is simply mechanical. In other words, the story is not about politics but biology; that is, leaders who are longer in power are more likely to have a son fit enough to become a ruler. To address this concern, we collected data on rulers' date of birth and then created a variable for the age when they first took office.[6] When we include this as a covariate we find that older leaders are more likely to have a son succeed into power, but importantly for our argument, we still find a positive and significant effect of leader's tenure on his ability to pass on power to his offspring (column 5). One may also be concerned about the existence of non-linearities in the relationship between tenure (or age at time of ascension) and our outcome of interest. In column 6 we include quadratic terms for both variables and still find a positive effect of tenure on the probability of observing a son as a successor. Finally, one may be concerned about identifying the set of rulers who died in office. As discussed in Kokkonen and Sundell (2014), there may be inaccuracies in Morby (2002)'s coding of deposals. To address this issue we rely on the much smaller sample and coding analyzed in Kokkonen and Sundell (2014). The results are virtually the same and are reported in Table 5 in Appendix A.

Next, in Table 2 we repeat this analysis but now treat the outcome as whether a leader

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[6]We were unable to find the date of birth for a about 22 percent of rulers in the sample. To avoid list-wise deletion, we imputed the age of leaders in 5 dataset using the Amelia R library. The results reported in Table 1 are pooled estimates as discussed in King et al. (2001, p. 53).

	Outcome: Son as Successor$_i$					
	(1)	(2)	(3)	(4)	(5)	(6)
Tenure$_i$	0.056***	0.049***	0.049***	0.050***	0.056***	0.141***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.012)
Tenure$_i^2$						−0.002***
						(0.0004)
Ascent Age$_i$					0.254***	0.316***
					(0.071)	(0.084)
Ascent Age$_i^2$						−0.230***
						(0.065)
Constant	−1.282***	−1.100***	−1.122***	−1.157***	−1.280***	−1.770***
	(0.085)	(0.118)	(0.129)	(0.130)	(0.141)	(0.180)
Country RE	No	Yes	Yes	Yes	Yes	Yes
Century RE	No	No	Yes	Yes	Yes	Yes
House RE	No	No	No	Yes	Yes	Yes
Observations	1,935	1,935	1,935	1,935	1,935	1,935

Note: *p<0.1; **p<0.05; ***p<0.01

Table 1: Leader Tenure and Probability of Son as Successor. The table reports the estimates of the effect of tenure on the leader's probability of having a son as successor. The estimate for the effect of tenure is positive and statistically significant (column 1). This result is robust to the inclusion of century, country, and house random effects (columns 2-4), the inclusion of age of ruler at time of ascent (column 5), and when including quadratic terms for tenure and age at ascent (column 6).

is succeeded by either his son or brother. The effect of tenure remains similar in both magnitude and statistical significance. However, since the outcome now accounts for two types of close relatives, the baseline prediction (that at year zero of tenure) is simply shifted upwards as evidence by the larger estimate for the intercept in relation to the one reported in Table 1. Again, as a robustness check we repeated the analysis using the Kokkonen and Sundell (2014) sample and the results remain unchanged (see Table 6 in Appendix A).

Finally, to give a sense of the magnitude of the effects, in Figure 1 we plot predicted probabilities of successor type (along with 95 percent confidence intervals) as a function of leader tenure. We simulated these probabilities for leader tenure ranging from 1 to 25 years

	Outcome: Son or Brother as Successor$_i$					
	(1)	(2)	(3)	(4)	(5)	(6)
Tenure$_i$	0.044***	0.032***	0.032***	0.033***	0.032***	0.107***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.012)
Tenure$_i^2$						−0.002***
						(0.001)
Ascent Age$_i$					−0.085	−0.034
					(0.089)	(0.101)
Ascent Age$_i^2$						−0.221***
						(0.063)
Constant	−0.465***	−0.064	−0.098	−0.119	−0.084	−0.439***
	(0.078)	(0.130)	(0.154)	(0.154)	(0.157)	(0.183)
Country RE	No	Yes	Yes	Yes	Yes	Yes
Century RE	No	No	Yes	Yes	Yes	Yes
House RE	No	No	No	Yes	Yes	Yes
Observations	1,935	1,935	1,935	1,935	1,935	1,935

Note: *p<0.1; **p<0.05; ***p<0.01

Table 2: Leader Tenure and Probability of Son or Brother as Successor. The table reports the estimates of the effect of tenure on the leader's probability of having a son or brother as successor. The estimate for the effect of tenure is positive and statistically significant (column 1). This result is robust to the inclusion of century, country, and house random effects (columns 2-4), the inclusion of age of ruler at time of ascent (column 5), and when including quadratic terms for tenure and age at ascent (column 6).

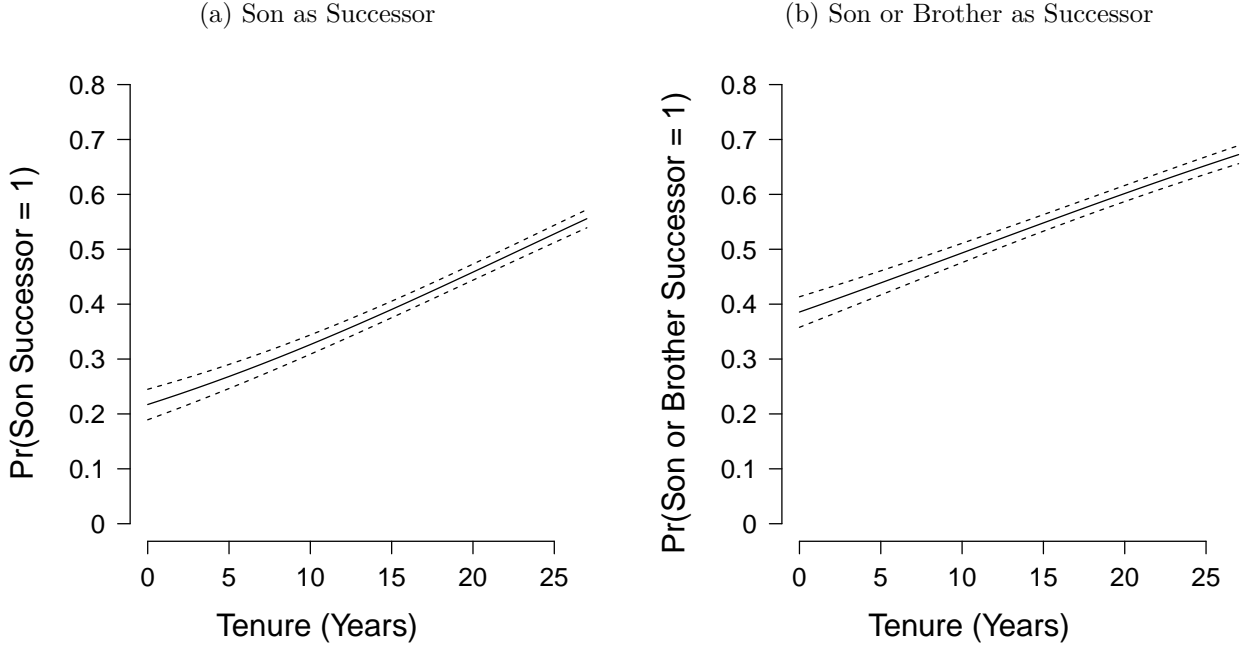| (a) Son as Successor | (b) Son or Brother as Successor |

Figure 1: Leader Tenure and Probability of Son (and Son or Brother) as Successor. This figure shows the predicted probabilities (and 95% confidence intervals) of a leader having a son (Panel 1a) and son or brother (Panel 1b) as a successor as a function of tenure (based on the estimates reported in column 1 of Table 1). Both panels show a large and positive effect of tenure on the probabilities of interest. For instance, Panel 1a shows that increasing tenure from, say, 5 to 20 years (a magnitude that corresponds to one standard deviation of the observed values in the data) leads to a 19-percentage point increase in the probability of observing a son as a successor (from about 27 to 46 percent respectively). Similarly, Panel 1b shows that increasing tenure by a same magnitude in the same range leads to a 16-percentage point increase in the probability of a leader having a son or brother as a successor (from about 44 to 60 percent respectively).

(accounting for about 95% of the observed tenure values).[7] We find that leader tenure has a substantive effect on the leader's probability of passing on power to a close relative. For instance, in panel 1a we find that increasing tenure from, say, 5 to 20 years (a magnitude that corresponds to one standard deviation of the observed values in the data) leads to a 19-percentage point increase in the probability of observing a son as a successor (from about 27 to 46 percent respectively). Similarly, as shown in Panel 1b increasing tenure by a same

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[7]All simulations were generated with the regression specification reported in Column 1 of Tables 1 and 2.

magnitude in the same range leads to a 16-percentage point increase in the probability of a leader having a son or brother as a successor (from about 44 to 60 percent respectively). Having shown how tenure affects who becomes a successor, in the next two sections we show how the former also affects political stability and institutional development in autocracies.

5   Stability Across Generations

Having demonstrated that longer-living leaders are more likely to have successors who are their sons, in this section we show that, similarly, longer tenured rulers cede power to successors who are less likely to be deposed in office. In doing so, we show that power accumulated across time can not only be used to select a preferred successor but to make their regime more stable as well.

To demonstrate this we take a similar approach as in last section but now we treat the outcome as the probability that a leader's successor is deposed. Again, we estimate the relationship between leader tenure and successor deposal for the set of leaders who died naturally in office using the mixed effects logistic regression discussed in the previous section. The results are presented in Table 3. In column (1) we give the main, unconditional, result. Then, in columns (2)-(4) we report estimates where we successively add in random effects to account for country, century, and family specific heterogeneity. In column (5), we report the estimate of tenure when controlling for a leader's age at time of ascension. Last, in Column (6) we account for possible non-linearities in age and leader tenure by including their squared terms. As before, our results are robust to both the inclusion of century, family and country random effects and conditioning on the age at which a leader ascended to power.

Across all specifications our estimates show that leaders who last longer in office produce successors who are considerably less likely to be deposed. To give a sense of the magnitude of the effects, in Figure 2 we plot predicted probabilities of successor deposal as a function

		Outcome: Successor Deposed$_i$				
	(1)	(2)	(3)	(4)	(5)	(6)
Tenure$_i$	-0.015^{***}	-0.012^{**}	-0.010^{*}	-0.010^{*}	-0.011^{*}	-0.044^{***}
	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.015)
Tenure$_i^2$						0.001^{**}
						(0.0005)
Ascent Age$_i$					-0.031	0.033
					(0.091)	(0.100)
Ascent Age$_i^2$						-0.128
						(0.090)
Constant	-1.716^{***}	-1.929^{***}	-2.002^{***}	-2.064^{***}	-2.052^{***}	-1.711^{***}
	(0.110)	(0.157)	(0.192)	(0.194)	(0.198)	(0.235)
Country RE	No	Yes	Yes	Yes	Yes	Yes
Century RE	No	No	Yes	Yes	Yes	Yes
House RE	No	No	No	Yes	Yes	Yes
Observations	1,935	1,935	1,935	1,945	1,935	1,935

Note: *p<0.1; **p<0.05; ***p<0.01

Table 3: Leader Tenure and Probability of Successor Deposal. The table presents the estimates of the effect of tenure on the probability that a leader's successor is deposed. The estimate for the effect of tenure is negative and statistically significant (column 1). That is, successors of leaders with longer tenures face a lower probability of being overthrown. This result is robust to the inclusion of century, country, and house random effects (columns 2-4), the inclusion of age of ruler at time of ascent (column 5), and when including quadratic terms for tenure and age at ascent (column 6).

of leader tenure, again simulating these probabilities for leader tenure ranging from 1 to 25 years. Across these values the probability of having a successor deposed decreases from about 15.25 to 10.65%. This decline of 4.6 percentage-points is substantial considering the unconditional probability of having a successor who was deposed for the set of leaders who died naturally in office is 12.1%. Our most conservative estimate, derived from column (4) in Table 3, indicates a change of 2.72 percentage-points. Again our results remain unchanged when we use the restricted Kokkonen and Sundell (2014) sample (see Table 7 in Appendix A).
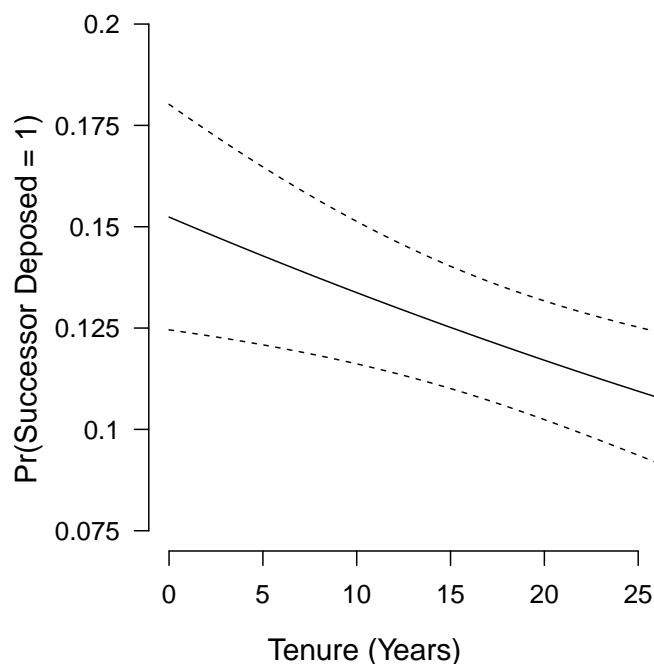
Figure 2: Leader Tenure and Probability of Successor Deposal. This figure shows the predicted probabilities (and 95% confidence intervals) of a leader's successor being deposed. The estimates are taken from column (1) of Table 3. The figure shows that increasing tenure from 5 to 20 years (a magnitude that corresponds to one standard deviation of the observed values in the data) leads to a 2.5-percentage point decrease of a leader's successor being deposed (from about 14 to 11.5 percent respectively).

In all, these results indicate that the length of time leaders spend in office affects not only who their successors are but the probability that those who follow them in office will be removed via deposal. This suggests that the underlying ability of leaders to consolidate power causes both observed patterns of succession and regime stability. Moreover, this finding indicates that time in office yields a non-institutional source of power that is capable of being transmitted across generations within political regimes.

6 The Presence of Parliamentary Constraints

If a leader's time in office is a proxy for their ability to construct and transmit power we expect that as a leader's time in office increases they should become less likely to be face institutional constraints to their authority. Moreover, if they are able to pass this accumulated power to their successors we should expect those who follow leaders with longer tenures to similarly face fewer institutional constraints. In this section we test both of these claims by focusing on the presence of parliaments after the year 1200, about the time such institutions first came into existence.

First, we provide evidence supporting the notion that time in power allows leaders to operate unconstrained by institutions like parliaments. To test this argument, we first examine the relationship between a leader's time in power and the likelihood that he calls a parliament. We treat the probability that leader i calls a parliament in year t of his reign, $\Pr(\text{Parliament}_{it}=1|\text{Tenure} = t)$, as a smooth function of tenure, estimated via loess regression. As in the previous sections, Figure 3 gives the predicted probabilities across years 1-25 of a leader's tenure (representing roughly ninety-five percent of the data). We see that, as expected, there is a sharp decline across time in the probability that a leader calls a parliament, from about 44% in the first year of rule to a 30% probability in year 25.

If leaders can use time in office to accumulate and pass on power, we might expect the ability to resist the imposition of parliamentary constraints to persist across generations within a regime. To assess this, we next examine, again for the set of leaders who died naturally in office, the effect of a leader's length of tenure in office on the probability their successor is constrained by a parliament.

The data on parliaments from Abramson and Boix (2015) records the presence or absence of a parliamentary body in each year of a leader's reign, taking on a value of one if a body met in a given year and a value of zero if it did not. However, because of natural attrition
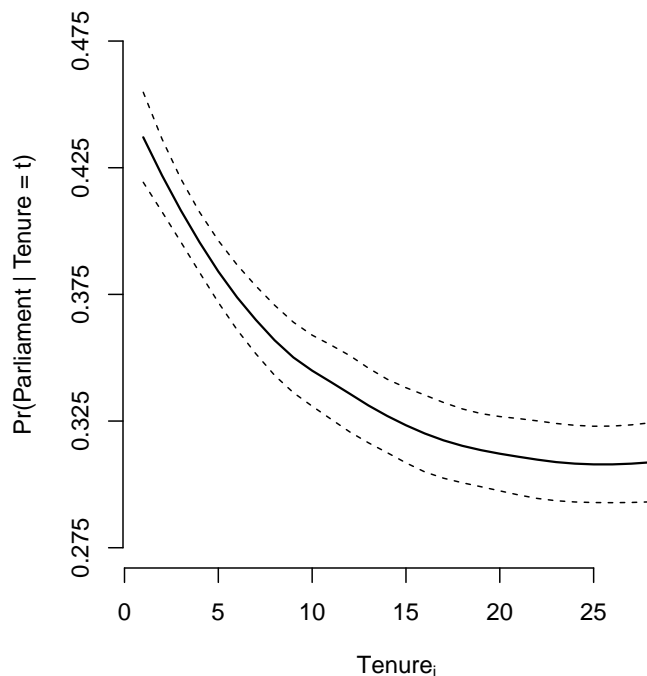
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Figure 3: Loess fit of the probability that a leader calls a parliament as a function of the duration of his reign for the set of monarchs who exit office via a natural death. The x-axis gives the number of years in which a leader has been in office. The y-axis gives the predicted probability (and 95 percent confidence intervals) that a leader calls a parliament in a given year. The figure shows a significant decline in this outcome as the reign of a leader increases, from about 44% in the first year of rule to a 30.0% probability in year 25.

and deposal, not all successors face the same number of years in which they might face a parliament. To account for this we use a binomial regression framework to weight each observation by the number of trials (years) in which a successor might face a parliament. These estimates are presented in Table 4. In each specification, successively accounting for country, house, and century unobservables, we find a strong, negative, relationship between a leader's tenure and the probability their successor is forced to call a parliament in a given year of his rule. These results are robust when relying on the Kokkonen and Sundell (2014) sample (see Table 8 in Appendix B).

The magnitude of this effect is plotted in Figure 4, which gives the predicted probabilities

across years 1-25 of a leader's tenure. We see that, again, there is a sharp decline across time in the probability that a leader calls a parliament in a given year, from about 44% for a leader whose predecessor lasted just one year in office to 31% probability for a leader whose predecessor lasted 25 years. This estimate is remarkably similar in magnitude to those we estimated when looking at the probability a leader himself faces a parliament across time within his regime. According to our loess estimates, a leader in his twenty-fifth year has a probability of facing a parliament of about 30%. If he died in this same year, we estimate that his successor would face a parliament with about a 31% probability. Similarly, a leader in the first year of office has a predicted probability of facing a parliament of about 44%. If he were to die in his first year, we estimate his successor would also be 44% likely to call a parliament. In all, these results indicate that leaders are themselves less likely to face parliamentary constraints across their rule and, moreover, capable of transmitting the power they accumulate across generations within their political regime.

7 Power vs. Institutions

Up to this point, we have shown that leader tenure (a proxy for the capital rulers accumulate while in office) is an important determinant of the identity of successors, the stability of regimes, and the presence of institutional constraints on executives. We have also argued that this theoretical account has been largely ignored in the literature. In this section we show, relying on a causal mediation framework (Imai et al. 2011), that the direct impact of accumulated political capital on the likelihood a leader's successor to maintain a hold on power is at least as important as the impact it when it operates through the construction of formal institutions.

To illustrate this point we revisit (Kokkonen and Sundell 2014). The main finding in their study is that primogeniture, an institution under which the first child of a monarch is

	Dependent variable: Probability Successor Calls a Parliament					
	(1)	(2)	(3)	(4)	(5)	(6)
Tenure	−0.0236***	−0.0138***	−0.0140***	−0.0138***	-0.0120***	-0.0480***
	(0.0014)	(0.0018)	(0.0020)	(0.0025)	(0.0027)	(0.0081)
Tenure^2						0.001***
						(0.0004)
Age					0.02771	0.0520
					(0.0623)	(0.0591)
Age^2						0.030
						(0.0486)
Constant	−0.2525***	−0.7722*	−2.0753**	−1.9084***	−1.9414***	−1.659***
	(0.0355)	(0.4662)	(1.0091)	(0.6621)	(0.6601)	(0.6710)
Country RE	No	Yes	Yes	Yes	Yes	Yes
Century RE	No	No	Yes	Yes	Yes	Yes
House RE	No	No	No	Yes	Yes	Yes
Observations	538	538	538	538	538	538

Note: *p<0.1; **p<0.05; ***p<0.01

Table 4: Leader Tenure and Probability A Successor Calls a Parliament. The table presents the estimates of the effect of tenure on the probability that, in a given year of their rule, a leader's successor faces a parliament. The estimate for the effect of tenure is negative and statistically significant (column 1). That is, successors of leaders with longer tenures face a lower probability of having to call a parliament. This result is robust to the inclusion of century, country, and house random effects (columns 2-4), the inclusion of age of ruler at time of ascent (column 5), and when including quadratic terms for tenure and age at ascent (column 6).

the designated successor to the throne, leads to a decrease in the incidence of leader deposal. Kokkonen and Sundell (2014) offer two mechanisms by which primogeniture works to bring about this effect. First, according to their argument, the existence of an anointed successor makes members of the elite less likely to engage in a power-grabbing fight (coordination problem). Second, the long-time horizon of a young anointed successor, the argument goes, makes him less likely to rise against the current leader relative to older designated successors (crown prince problem).

The theoretical discussion and empirical results presented in this paper, suggest that
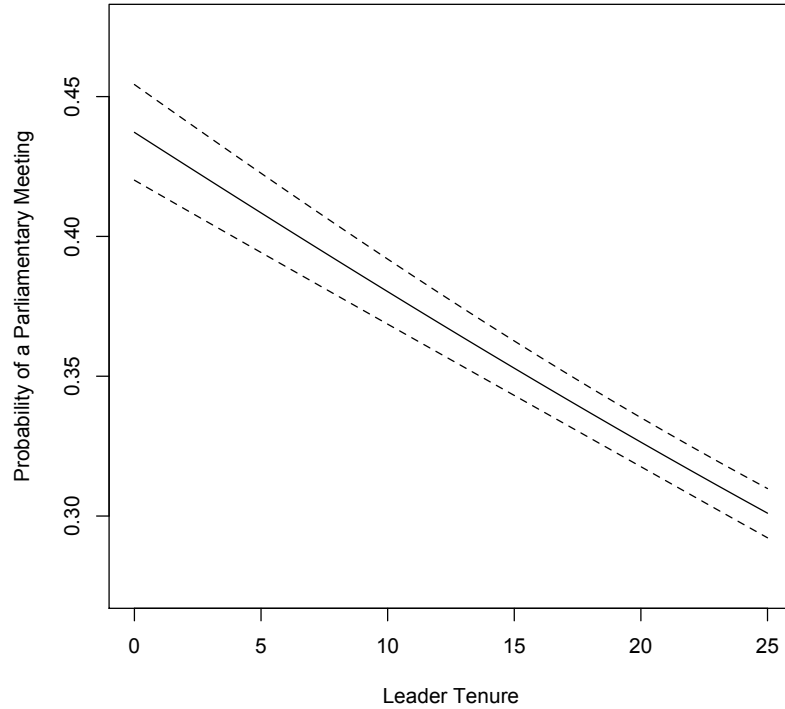
Figure 4: Binomial regression fit of the probability that a leader calls a parliament in a given year as a function of the duration of his predecessor's reign for the set of monarchs who exit office via a natural death. The x-axis gives the number of years in which a leader was in office. The y-axis gives the predicted probability (and 95 percent confidence intervals) that his successor calls a parliament in a given year. The figure shows a significant decline in this outcome as the reign of a leader increases, from about 44% in the first year of rule to a 30.0% probability in year 25.

their analysis is incomplete. As we have shown in the previous section a leader's tenure (a proxy for political capital) is an important determinant of the presence of parliaments in pre-modern Europe. Thus, we expect that leaders who stay in office for longer periods, thereby enabling them to accumulate power, should also be able to institute a succession order to their liking - primogeniture being one clear example.

To incorporate this possibility we revisit Kokkonen and Sundell (2014) and analyze their data under a causal mediation framework (Imai, Keele and Tingley 2010, Imai et al. 2011,

Imai, Tingley and Yamamoto 2013). The advantage of causal mediation is that it allows researchers to identify the average effect a treatment has on its own and through a mediator on a given outcome of interest. In our particular context, we are interested in disentangling the direct effect a leader's tenure has on their successor's deposal from the one that is has through primogeniture. Following the strategy we adopted in the previous sections, we limit our analysis to the leaders who died naturally in office.

For the analysis to yield properly identified estimates two assumptions must be satisfied: ignorability of the treatment and sequential ignorability for the mediator. In substantive terms this means that both the treatment and the mediator (conditional on a treatment) have to be as good as random. These assumptions allows us to identify the Average Direct Effect (ADE) and Average Causal Mediation Effect (ACME) of political power on leader deposal. By focusing on the set of leaders who died in office of natural causes, we satisfy the first assumption. We don't have evidence strongly supporting the second assumption. In fact, we expect primogeniture to be endogenous to a leader's length of tenure. However, the causal mediation framework allows us to estimate the effect of primogeniture under the best of circumstances, that is when it can be considered as exogenous conditional on a given length of leader tenure.

Although this setup allows us to identify effects for continuous treatments, the mediation effects are only defined across discretized values of this continuous measure (Imai, Keele and Tingley 2010). Therefore, in our analysis we classified leader tenure into quartiles. We then compute the ADE and ACME by comparing different tenure quartiles. Panels 5a and 5b in Figure 5 present the results of this exercise when relying on the Morby (2002) and Kokkonen and Sundell (2014) samples respectively. Across both samples, we find that the direct effect of power is at least as large as (or larger than) the one it has through primogeniture on successor deposal. For instance, as indicated by the dashed line segments, increasing leader tenure from the first to the fourth quartile in the sample leads to a direct 10-percentage
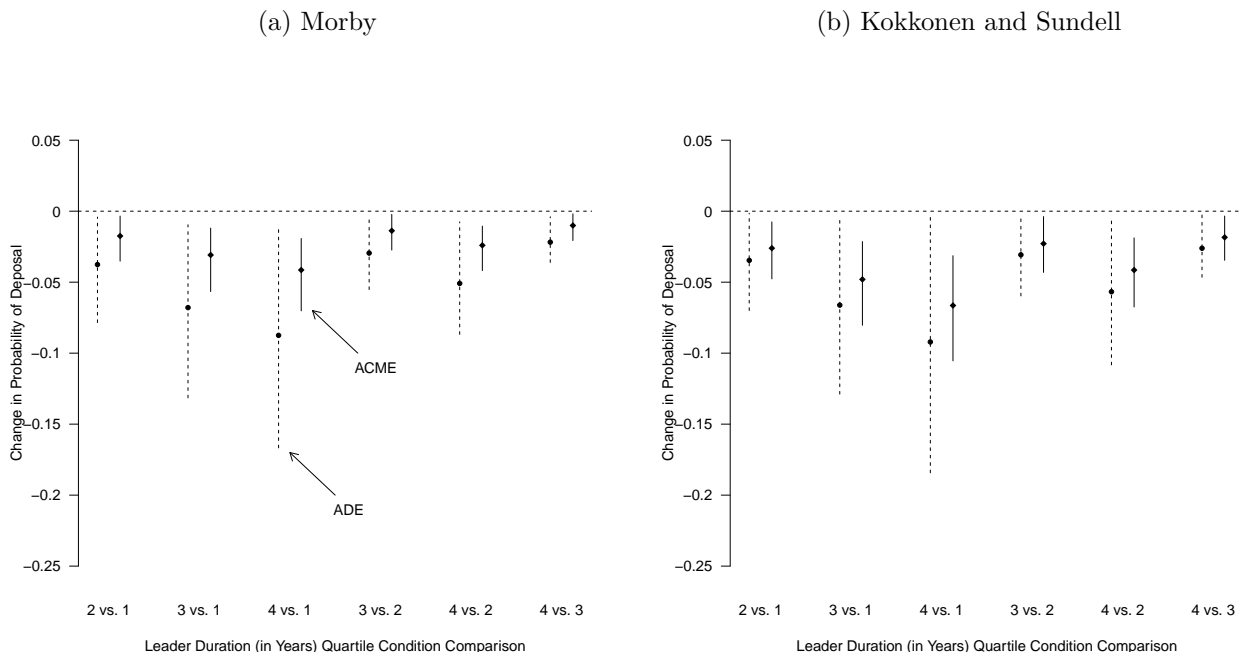
(a) Morby   (b) Kokkonen and Sundell

Figure 5: Average Direct Effect (ADE) and Average Causal Mediation Effect (ACME) of Leader Tenure on Successor's Deposal. Panels 5a and 5b show the ADE and ACME of leader tenure on the probability of successor deposal using the coding in Morby (2002) and Kokkonen and Sundell (2014) respectively. The solid and dashed lines correspond to the ADE and ACME estimates respectively. In both samples we find that increasing leader tenure has a negative impact on the deposal of immediate successors. In panel 5a for instance, increasing leader tenure from the first to the fourth quartile leads to a 10-percentage point decrease in the probability of a successor's deposal. This estimate is twice the magnitude of the effect that tenure has through the institution of primogeniture.

point reduction in the probability of successor deposal. This is double the magnitude of the point estimate for the effect that power has through primogeniture (though of course the confidence intervals of the ADE and ACME overlap).

These results have important implications for the existing literature on the relationship between institutions and leader survival in non-democracies. Besides Kokkonen and Sundell (2014), Brownlee (2007) has also given primacy to institutions (in his case parties) in explaining patterns of leader deposal and succession in autocracies. But the discussion and the results in this paper show that such a framework is incomplete. Transfers of political

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capital that politicians make in autocracies affect the fate of successors directly and through institutions. Importantly, we have shown in this section that the direct effect of political power is as at least as large as (or larger than) the one that works through primogeniture.

8   Concluding Remarks

According to extant accounts, institutions play a key role in explaining stability and patterns of succession in autocracies. We have argued that this sort of reasoning is incomplete. The institutionalist perspective that has dominated the field has largely ignored the role that political power plays in the political development of non-democracies. To fill this gap we exploited the timing of a monarch's death in Europe, and show that leaders who experience longer tenures were more likely to have close relatives as successors. We also show that those leaders whose predecessors had longer tenures are less likely to experience deposals and less likely to call on parliaments. Lastly, we find that the direct of effect of tenure on leader deposal is at least as large (if not larger) than the one it has through institutions like primogeniture. Together, these results suggest that institutions, regime stability, and patterns of succession in autocratic regimes are a reflection of the underlying distribution of power in a polity. In other words, leaders who enjoy longer spells as monarchs are able to consolidate their hold in office. This in turn has an impact on who comes into power in subsequent periods and the types of institutions that emerge long after monarchs leave office.

The mechanism driving our results are related to patterns of inter-generational transfers of power observed in democracies. A recent literature has found that long-tenured incumbents are more likely to have a relative serve in office in the future (Dal Bo, Dal Bo and Snyder 2009, Querubin 2010, Rossi 2009). This literature argues that holding office allows politicians to accumulate political capital (in the form of networks, access to donors, and name-recognition

among voters) which they can then pass on to members of their family and the latter use to gain access to office. Rulers in autocracies may also be able to accumulate political capital. For example, longer tenures may afford monarchs with the ability to exterminate enemies and place allies in key positions. This in turn influences their ability to consolidate their hold in power and affects institutional development in autocracies.

Although these results are derived from data on European states before the industrial revolution, they speak to problems inherent to autocratic states across time. Hereditary dictatorships like the Assads of Syria or the Kims of North Korea have proved remarkably stable and capable of passing power across time within the same ruling family. The sources of their power, moreover, are largely non-institutional. Take the political life of Korean dictator Kim Il-Sung as an example. Kim, who ruled the Democratic People's Republic of Korea (DPRK) for forty-five years, from 1948 until his death in 1994, built a ruthlessly efficient personalist state apparatus and proved capable of sustaining hereditary rule across three generations.

Future research should investigate the dynamics of accumulation of power in contemporary autocracies. For instance, in the current historical period actors in regime may experience different financial returns from news about the health of an autocrat (Fisman 2001, Faccio and Parsley 2009) or from shocks to the prices of natural resources. Depending on the pre-existing preferences of actors, these shocks may strengthen the position of a ruler or bolster the political prospects of opposition groups. We leave these questions for future research.

References

Abramson, Scott and Carles Boix. 2015. "The Roots of the Industrial Revolution: Political Institutions or (Socially Embodied) Know-How?" *Working Paper* .

Bachrach, Peter and Morton S Baratz. 1962. "Two faces of power." *American political science review* 56(04):947–952.

Beckfield, Jason. 2004. "Does income inequality harm health? New cross-national evidence." *Journal of Health and Social Behavior* 45(3):231–248.

Behn, Bruce K, David D Dawley, Richard Riley and Ya-wen Yang. 2006. "Deaths of CEOs: Are Delays in Naming Successors and Insider/Outsider Succession Associated with Subsequent Firm Performance?" *Journal of Managerial Issues* pp. 32–46.

Berle, Adolf Augustus. 1967. *The three faces of power*. Harcourt, Brace & World.

Blaydes, Lisa. 2010. *Elections and distributive politics in Mubarak's Egypt*. Cambridge University Press.

Blaydes, Lisa and Eric Chaney. 2012. "The Feudal Revolution and Europe's Rise: Political Divergence of the Christian West and the Muslim World before 1500 CE." *American Political Science Review* pp. 1–19.

Boix, C. 2008. "Economic roots of civil wars and revolutions in the contemporary world." *World Politics* 60(03):390–437.

Boix, C. and M. Svolik. 2013. "The foundations of limited authoritarian government: Institutions and power-sharing in dictatorships." *The Journal of Politics* 75(2):300–316.

Brownlee, Jason. 2007. "Hereditary Successions in Modern Autocracies." *World Politics* 59:595–628.

Brownlee, Jason. 2008. "Bound to Rule: Party Institutions and Regime Trajectories in Malaysia and the Philippines." *Journal of East Asian Studies* 8:89–118.

Chen, Jidong and Yiqing Xu. 2013. "On Deliberative Authoritarian Governance." *Available at SSRN 2318051* .

Cox, Gary W. 2009. "Authoritarian elections and leadership succession." *Unpublished manuscript* .

Cramer, Christopher. 2003. "Does inequality cause conflict?" *Journal of International Development* 15(4):397–412.

Dal Bo, Ernesto, Pedro Dal Bo and Jason Snyder. 2009. "Political Dynasties." *Review of Economic Studies* 76:115–142.

Etebari, Ahmad, James O Horrigan and Jan L Landwehr. 1987. "To Be Or Not to Be-Reaction of Stock Returns to Sudden Deaths of Corporate Chief Executive Officers." *Journal of Business Finance & Accounting* 14(2):255–278.

Faccio, Mara and David C Parsley. 2009. "Sudden deaths: Taking stock of geographic ties." *Journal of Financial and Quantitative Analysis* 44(03):683–718.

Fearon, James D. 2011. "Self-enforcing democracy." *The Quarterly Journal of Economics* 126(4):1661–1708.

Fearon, James and David Laitin. 2003. "Ethnicity, Insurgency, and Civil War." *American Political Science Review* 97:75–90.

Fisman, Raymond. 2001. "Estimating the Value of Political Connections." *American Economic Review* 91:1095–1102.

Folch, Abel Escribà. 2003. "Legislatures in authoritarian regimes." Estudios/Working Papers (Centro de Estudios Avanzados en Ciencias Sociales).

Gandhi, Jennifer. 2008. *Political institutions under dictatorship*. Cambridge University Press Cambridge.

Gandhi, Jennifer and Adam Przeworski. 2006. "Cooperation, cooptation, and rebellion under dictatorships." *Economics & Politics* 18(1):1–26.

Gandhi, Jennifer and Adam Przeworski. 2007. "Authoritarian Institutions and the Survival of Autocrats." *Comparative Political Studies* 40:1279–1300.

Geddes, B. 1999. Authoritarian breakdown: Empirical test of a game theoretic argument. In *Working Paper (UCLA)*.

Geddes, B. 2006. "Why Parties and Elections in Authoritarian Regimes?" UCLA.

Gehlbach, Scott and Philip Keefer. 2011. "Investment without democracy: ruling-party institutionalization and credible commitment in autocracies." *Journal of Comparative Economics* 39(2):123–139.

Greene, Kenneth F. 2007. *Why dominant parties lose: Mexico's democratization in comparative perspective*. Cambridge University Press.

Hadenius, Axel and Jan Teorell. 2007. "Pathways from authoritarianism." *Journal of Democracy* 18(1):143–157.

He, Baogang and Mark E Warren. 2011. "Authoritarian deliberation: The deliberative turn in Chinese political development." *Perspectives on politics* 9(02):269–289.

Hensley, Wayne E. 1993. "Height as a Measure of Success in Academe." *Psychology: a journal of human behavior* .

Imai, Kosuke, Dustin Tingley and Teppei Yamamoto. 2013. "Experimental designs for identifying causal mechanisms." *Journal of the Royal Statistical Society: Series A (Statistics in Society)* 176(1):5–51.

Imai, Kosuke, Luke Keele and Dustin Tingley. 2010. "A general approach to causal mediation analysis." *Psychological methods* 15(4):309.

Imai, Kosuke, Luke Keele, Dustin Tingley and Teppei Yamamoto. 2011. "Unpacking the black box of causality: Learning about causal mechanisms from experimental and observational studies." *American Political Science Review* 105(4):765–789.

Jones, Benjamin F and Benjamin A Olken. 2005. "Do leaders matter? National leadership and growth since World War II." *The Quarterly Journal of Economics* pp. 835–864.

Jordan, William Chester. 2002. *Europe in the High Middle Ages: The Penguin History of Europe*. Penguin.

Judge, Timothy A and Daniel M Cable. 2004. "The effect of physical height on workplace success and income: preliminary test of a theoretical model." *Journal of Applied Psychology* 89(3):428.

King, Gary, James Honaker, Anne Joseph and Kenneth Scheve. 2001. "Analyzing Incomplete Political Science Data: An Alternative Algorithm for Multiple Imputation." *American Political Science Review* 76:49–69.

Kokkonen, Andrej and Anders Sundell. 2014. "Delivering Stability - Primogeniture and Autocratic Survival in European Monarchies 1000-1800." *American Political Science Review* .

Kurrild-Klitgaard, Peter. 2000. "The constitutional economics of autocratic succession." *Public Choice* 103(1-2):63–84.

Kurtz, David L. 1969. "Physical appearance and stature: Important variables in sales recruiting." *Personnel Journal* .

Lindqvist, Erik. 2012. "Height and leadership." *Review of Economics and Statistics* 94(4):1191–1196.

Lukes, Steven. 1974. *Power: A radical view*. Vol. 1 London Macmillan.

Lust-Okar, Ellen. 2006. "Elections under authoritarianism: Preliminary lessons from Jordan." *Democratization* 13(3):456–471.

Magaloni, Beatriz. 2008. "Credible Power-Sharing and the Longevity of Authoritarian Rule." *Comparative Political Studies* 41:715–741.

Mann, Michael. 1986. "The Sources of Social Power, Volume I." *A History of Power from the* .

Marmot, Michael. 2005. "Social Determinants of Health Inequalities." *The Lancet* 365:1099–1104.

Miller, Michael K. 2012. "Elections, information, and policy responsiveness in autocratic regimes." Working paper.

Miller, Michael K. 2013. "Electoral authoritarianism and democracy: A formal model of regime transitions." *Journal of Theoretical Politics* 25(2):153–181.

Morby, John E. 2002. *Dynasties of the World.* Oxford University Press, Oxford.

Myerson, Roger B. 2008. "The autocrat's credibility problem and foundations of the constitutional state." *American Political Science Review* 102(01):125–139.

North, Douglas and Barry R Weingast. 1989. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-century England." *Journal of Economic History* 49(4):803–32.

Pincus, Steven. 2009. *1688:The First Modern Revolution.* Yale University Press, New Haven.

Preston, Samuel H. 1975. "The changing relation between mortality and level of economic development." *Population studies* 29(2):231–248.

Querubin, Pablo. 2010. "Family and Politics: Dynastic Persistence in the Philippines." MIT.

Rossi, Martin. 2009. "Political Dynasties: Evidence from a Natural Experiment in Argentina." Universidad de San Andres.

Stasavage, David. 2002. "Credible commitment in early modern Europe: North and Weingast revisited." *Journal of Law, Economics, and Organization* 18(1):155–186.

Stasavage, David. 2003. *Public debt and the birth of the democratic state: France and Great Britain, 1688-1789.* Cambridge Univ Press.

Stasavage, David. 2007. "Cities, constitutions, and sovereign borrowing in Europe, 1274–1785." *International Organization* 61(03):489–525.

Stogdill, Ralph M. 1948. "Personal factors associated with leadership: A survey of the literature." *The Journal of psychology* 25(1):35–71.

Svolik, Milan W. 2009. "Power sharing and leadership dynamics in authoritarian regimes." *American Journal of Political Science* 53(2):477–494.

Svolik, Milan W. 2012. *The politics of authoritarian rule.* Cambridge University Press.

Truex, Rory. 2014. "Consultative Authoritarianism and Its Limits." *Comparative Political Studies* p. 0010414014534196.

Tullock, Gordon. 1987. *Autocracy.* Springer, Dordrecht.

Wedeen, Lisa. 1999. *Ambiguities of domination: Politics, rhetoric, and symbols in contemporary Syria.* University of Chicago Press.

Weingast, Barry R. 1997. "The political foundations of democracy and the rule of law." *American political science review* pp. 245–263.

Wright, Joseph. 2008. "Do authoritarian institutions constrain? How legislatures affect economic growth and investment." *American Journal of Political Science* 52(2):322–343.

Wright, Joseph and Abel Escriba-Folch. 2012. "Authoritarian institutions and regime survival: transitions to democracy and subsequent autocracy." *British Journal of Political Science* 42(02):283–309.

Young, Thomas J and Laurence A French. 1996. "Height and perceived competence of US presidents." *Perceptual and motor skills* .

Zebrowitz, Leslie A. 1994. "Facial maturity and political prospects: Persuasive, culpable, and powerful faces." *Beliefs, reasoning, and decision making: Psycho-logic in honor of Bob Abelson* pp. 315–345.

Appendix A

This appendix replicates the main results reported in Sections 4 and 5 in the paper when relying on the sample analyzed in Kokkonen and Sundell (2014). A concern that this study raises is that Morby (2002) miscoded the way in which monarchs left power. For example, some monarchs may have been recorded in *Dynasties of the World* as having died in office, while in reality they may have been deposed or could have abdicated. If this is the case, then some the observations in the sample that we analyze may not be valid for our proposed identification strategy.

To address this concern, we rely on the sample analyzed in Kokkonen and Sundell (2014). The authors of this study checked the accuracy of each of the records included in *Dynasties of the World* and created their own coding for whether a given leader was deposed or not. Here we use their data to test our arguments.

We focus on leaders who died in office to estimate the effect that leader tenure has on the probability of them having a son or brother follow them into office. We then also estimate the effect that tenure has on the probability that a leader's successor is deposed. Tables 5 and 6 report the results on the effect of tenure on the identity of successors. Table 7 reports the results on the effect of tenure on successor deposal.

Columns (1) - (5) in Table 5 show that across all specifications we find that a leader's tenure has a positive impact on his ability to pass on power to his son. This effect is robust first to the inclusion of country and century random effects (columns 2-3). The relationship is also robust to the inclusion of a leader's age at ascension (Column 4), and quadratic terms for both tenure and age at ascension (Column 5).

Similarly, Table 6 reports the results for the effect on tenure on whether a leader's son or brother succeed them into power. Again, columns (1) - (5) show that across all specifications a leader's tenure has a positive impact on his ability to pass on power to his son or brother. This effect is robust first to the inclusion of country and century random effects (columns 2-3). The relationship is also robust to the inclusion of a leader's age at ascension (Column 4), and quadratic terms for both tenure and age at ascension (Column 5).

Lastly, Table 7 reports the results for the effect on tenure on whether a leader's successor is deposed. Columns (1) - (5) show that across all specifications tenure has a negative impact on the probabability that a leader's successor is deposed. This effect is robust first to the inclusion of country and century random effects (columns 2-3). The relationship is also robust to the inclusion of a leader's age at ascension (Column 4), and quadratic terms for both tenure and age at ascension (Column 5).

| | Outcome: Son as Successor_i | | | | |
	(1)	(2)	(3)	(4)	(5)
Tenure$_i$	0.060***	0.060***	0.060***	0.067***	0.134***
	(0.007)	(0.007)	(0.007)	(0.008)	(0.022)
Tenure$_i^2$					−0.001***
					(0.000)
Ascension Age$_i$				0.313***	0.357***
				(0.105)	(0.114)
Ascension Age$_i^2$					−0.109
					(0.075)
Constant	−1.138***	−1.149***	−1.146***	−1.281***	−1.718***
	(0.155)	(0.173)	(0.192)	(0.222)	(0.309)
Country RE	No	Yes	Yes	Yes	Yes
Century RE	No	No	Yes	Yes	Yes
Observations	627	627	627	597	597

Note: *p<0.1; **p<0.05; ***p<0.01

Table 5: Leader Tenure and Probability of Son as Successor. The table replicates the results on the effect of tenure on the leader's probability of having a son as successor in the Kokkonen and Sundell (2014) sample. The estimate for the effect of tenure is positive and statistically significant. This result is robust to the inclusion of century and country random effects (columns 2-3), the inclusion ruler's age at time of ascent (column 4) and when including quadratic terms for tenure and age at ascent (column 5).

	Outcome: Son or Brother as Successor$_i$			
	(1)	(2)	(3)	(4)	(5)
Tenure$_i$	0.046***	0.046***	0.046***	0.048***	0.111***
	(0.006)	(0.007)	(0.007)	(0.007)	(0.022)
Tenure$_i^2$					−0.001***
					(0.000)
Ascension Age$_i$				0.139	0.204*
				(0.105)	(0.113)
Ascension Age$_i^2$					−0.188**
					(0.076)
Constant	−0.374**	−0.354*	−0.335	−0.399*	−0.670**
	(0.146)	(0.181)	(0.228)	(0.241)	(0.317)
Country RE	No	Yes	Yes	Yes	Yes
Century RE	No	No	Yes	Yes	Yes
Observations	627	627	627	597	597

Note: *p<0.1; **p<0.05; ***p<0.01

Table 6: Leader Tenure and Probability of Son or Brother as Successor. The table replicates the results on the effect of tenure on the leader's probability of having a son or brother successor in the Kokkonen and Sundell (2014) sample. The estimate for the effect of tenure is positive and statistically significant. This result is robust to the inclusion of century and country random effects (columns 2-3), the inclusion of ruler's age at time of ascent (column 4), and when including quadratic terms for tenure and age at ascent (column 5).

| | Outcome: Successor Deposed$_i$ | | | | |
	(1)	(2)	(3)	(4)	(5)
Tenure$_i$	−0.028***	−0.024***	−0.023***	−0.015*	−0.011
	(0.007)	(0.008)	(0.008)	(0.009)	(0.027)
Tenure$_i^2$					0.000
					(0.001)
Ascension Age$_i$				0.347***	0.358***
				(0.126)	(0.138)
Ascension Age$_i^2$					−0.017
					(0.083)
Constant	−0.626***	−0.828***	−0.894***	−1.114***	−1.123***
	(0.160)	(0.228)	(0.268)	(0.295)	(0.361)
Country RE	No	Yes	Yes	Yes	Yes
Century RE	No	No	Yes	Yes	Yes
Observations	598	598	598	569	569

Note: *p<0.1; **p<0.05; ***p<0.01

Table 7: Leader Tenure and Probability of Successor Deposal. The table replicates the results on the effect of tenure on the probability that a leader's successor is deposed in the Kokkonen and Sundell (2014) sample. The estimate for the effect of tenure is negative and statistically significant. That is, successors of leaders with longer tenures face a lower probability of being overthrown. This result is robust to the inclusion of century and country random effects (columns 2-3), the inclusion of age of ruler at time of ascent (column 4), and when including quadratic terms for tenure and age at ascent (column 5).

Appendix B

This appendix replicates the main results reported in Section 6 in the paper when relying on the sample analyzed in Kokkonen and Sundell (2014). In particular, we run a binomial regression, where the outcome of interest is the probability that a successor convenes a parliament, which depends on the duration in office of his predecessor. Across all specifications we find that a longer tenure of a predecessor is associated with a lower probability of a successor calling a parliament. This relationship is robust when we control for the age of ascension of a leader, and when we include country and century random effects along with quadratic terms for a leader's age at ascension and tenure.

	Outcome: Probability Successor Calls a Parliament				
	(1)	(2)	(3)	(4)	(5)
Tenure_i	-0.013^{***}	-0.014^{***}	-0.013^{***}	-0.010^{***}	-0.021^{***}
	(0.0014)	(0.0011)	(0.0011)	(0.002)	(0.008)
Tenure_i^2					-0.0017
					(0.003)
Age_i				0.010^{***}	0.014^{*}
				(0.002)	(0.008)
Age_i^2					0.000
					(0.000)
Constant	-0.497^{***}	-0.479	-0.609	-0.913	-0.870
	(0.045)	(0.567)	(0.645)	(0.659)	(0.664)
Country RE	No	Yes	Yes	Yes	Yes
Century RE	No	No	Yes	Yes	Yes
Observations	283	283	283	283	283

Note:	*p<0.1; **p<0.05; ***p<0.01

Table 8: Leader tenure and the probability that a successor calls a parliament is a given year. The table replicates the results on the effect of tenure on the probability that his successor calls a parliament in a given year, now analyzing the Kokkonen and Sundell (2014) sample. The estimate for the effect of tenure is negative and statistically significant. That is, successors of leaders with longer tenures are less likely to call a parliament. This result is robust to the inclusion of century and country random effects (columns 2-3), the inclusion of age of ruler at time of ascent (column 4), and when including quadratic terms for tenure and age at ascent (column 5).