

# Selection via Dynasties: Theory and Evidence\*

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## Abstract

Political leaders who are part of a dynasty have been an important feature of the political landscape throughout history. This paper argues that dynastic selection can play a role in improving economic performance when institutions for controlling politicians are weak and policy-making skills are persistent within a dynasty. In line with this idea, we show empirically using a sample leaders between 1848 and 2004 that economic growth is higher in polities with dynastic leaders but only when executive constraints are weak. This finding is mirrored in policy outcomes which affect growth. There is also evidence that dynasties end when the economic performance of dynastic leaders is poor. This suggests that citizens are tolerant of selection in dynasties when economic performance is good.

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# 1 Introduction

From ancient Pharaohs to modern-day Presidents and Prime Ministers, leaders who belong to dynasties are a common feature of the political landscape. Just as in the case of family-run firms, the existence of dynastic leaders raises the question of whether they are good or bad for economic performance at the country level. This paper uses a unique data set of political leaders between 1848 and 2004 to explore this issue.

Whether the characteristics of political leaders matter depends on how much discretionary authority they employ. In particular, if executive constraints are weak, selection through dynasties could be important, especially if leadership competence is transmitted across generations through either nature or nurture. Moreover, dynastic selection of leaders based on their competence will result in a positive correlation between economic performance and having a dynastic leader in office. Dynasties will also become established and survive based on economic performance.

This paper formalizes these arguments and takes the predictions to the data. It shows that there is indeed positive correlation between economic performance and being a dynastic politician which shows up only when executive constraints are weak. It also shows that poor economic performance in the past makes it more likely that a dynasty comes to an end.

The paper provides a novel perspective on debates about democratic institutions and economic performance. Following mixed success in finding a positive correlation between economic performance and democracy, the more recent literature has emphasized the importance of understanding heterogeneity in the performance under different institutional arrangements.<sup>1</sup> A focus on political selection as a factor in shaping how political systems work is also consistent with the thrust of the argument developed here.<sup>2</sup>

Blood ties between politicians of different generations are common and are observed in both autocratic and democratic systems. In the data that we present below, around 11% of all leaders since the mid nineteenth century have been part of a dynasty and the proportion is around 7% even in

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<sup>1</sup>See Barro (1996), Papaioannou and Siourounis (2008), and Przeworski and Limongi (1993). Persson and Tabellini (2009b) discusses the importance of heterogeneity.

<sup>2</sup>See Caselli and Morelli (2003) for a model and Besley (2005) for an overview of the issues. Recent contributions have shown both that selection matters and that appears to motivate voters. For example, Ferraz and Finan (2008, 2011) exploit auditing of local governments in Brazil to explore the issue.

democracies.<sup>3</sup> There is a small, but growing, literature which looks at political dynasties and their consequences. In a fascinating paper, Dal Bo, Dal Bo and Snyder (2009) document historic and geographic patterns in the evolution and profile of political dynasties in the U.S. since 1789. Using a regression discontinuity design, they argue that dynastic political power is self-perpetuating with a positive exogenous shock to a person's political power having persistent effects on holding political power. Querubin (2010) looks at political dynasties in the Philippines using a similar approach and finds an even stronger effect of a political advantage through a family connection on holding power. In Querubin (2011), he finds that there is no effect of introducing a term limit on the persistence of family power.

Interest in political dynasties is part of a wider interest in the role of elites in acquiring and maintaining political power in different settings. Perhaps the most famous statement on this topic is the celebrated work by Mosca (1939) and Pareto (1901). Tullock (1987) argued that hereditary transitions of power were part of a wider strategy for sustaining elite control in autocracies since it provides a means of insulating the elite from potentially destabilizing power struggles. Brownlee (2007) studies transitions of power in a sample of 258 post war autocratic leaders who rule for at least three years. He argues that hereditary succession tends to be accepted by ruling elites when there are no formal party structures to regulate transitions of power.

This paper is also related to the large literature on dynastic control in firms and whether firms suffer from being controlled by family members – see, for example, Benedsen et al (2007), Bloom and VanReenen (2007), Burkhart et al (2003) for discussion of aspects of this. In general, these studies have found that family-owned businesses are run more poorly than other firms. However, we are not aware of studies that have studied whether there is heterogeneity in the performance of family run firms depending on governance arrangements in place, for example by outside investors.

The remainder of the paper is organized as follows. In the next section, we discuss some background facts to motivate the paper and introduce the data. Section three discusses the theoretical framework which underpins the interpretation of the empirical findings. Section four develops the empirical implications of the model. Section five presents evidence on growth and section six on the persistence of dynasties. Section seven concludes.

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<sup>3</sup>These numbers are similar to those found for the U.S. Congress by Dal Bo, Dal Bo and Snyder (2009).

## 2 Background Facts

To identify the leader in each country and year, we use the Archigos data set which covers the period between 1875 and 2004.<sup>4</sup> To measure whether a leader belongs to a political dynasty, we construct a variable that captures the family connections of each leader. Specifically, for each leader in our sample we collected information on whether his father, mother, grandfather, uncle, brother, cousin, spouse, brother-in-law holds or had held any political position. The latter is defined very broadly to capture involvement in politics. This could be high office such as a Prime Minister, President or King. However, it could also be a lesser position such as a Member of Parliament or a Mayor. In a small number of cases, we classify a leader as being from a political dynasty if they are related to a Clan Chief, Religious Leader or Samurai.

This information comes mainly from the *Encyclopedia of Heads of States and Governments*, *Oxford Political Biography: Who is Who in the Twentieth Century World Politics*, *Encyclopedia Britannica*, other online sources, and biographies contained in *Lexis-Nexis*. Using these sources, we have a core sample of leaders in 197 countries between 1848 and 2004 out of a potential sample of 227 countries. Picking one leader per year this gives us a total of 2097 leaders, and a total of 2484 leader-spells in office.<sup>5</sup>

Using the broadest definition of belonging to a dynasty, we classify 11% of the leaders in our sample as being dynastic. However, if we restrict this to having a blood connection, i.e. a direct hereditary line from a previous generation via father/mother or grandfather, this falls to 9.4% of leaders.<sup>6</sup>

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<sup>4</sup>Archigos has two datasets: one which gives information on leader, year and country, and one which gives information only on leader and country. In the latter data there are 95 leader-country observations that do not appear in the former. In our analysis, we include these 95 observations which are for the following countries: Barbados, Bahamas, Belize, Brunei, Cape Verde, Iceland, Luxemburg, Maldives, Malta, Montenegro, Solomon Islands, Suriname, Tiber, Transvaal, Zanzibar. We extend the data back to 1848 for a few countries. Many countries have more than one “head of state”. The Archigos data identifies the actual effective ruler based on a judgement about the particularities of each country. Two rules are generally followed: (i) in Parliamentary regimes, the prime minister is coded as the ruler while in Presidential systems, it is the president; (ii) in communist states the Chairman of the Party is coded as the effective ruler.

<sup>5</sup>In cases where more than one leader is in office in a given year, we focus on the leader who has been in office for the longest time period during the year.

<sup>6</sup>All leaders whose mother was involved in politics, also had a father or grandfather who was involved in politics according to our definition.

This narrower definition will serve as our core definition of dynastic leader in the empirical analysis below.

We begin by looking at the prevalence of dynastic leaders and how it has changed over time. Among countries that were already independent before 1900, there has been some decline in political dynasties but it is modest. Around 10.7% of leaders between 1840 and 1900 are classified as belonging to a dynasty compared to 7.5% for the period between 1950 and 2004.<sup>7</sup> Among the newer countries, i.e. those which appear in the data later than 1900, around 11.2% have leaders from political dynasties. There is no significant correlation between the year in which the leader comes to power and whether he is classified as being from a dynasty.<sup>8</sup>

Figure 1 illustrates the time-series pattern. The red line is for all leaders and shows a general downward trend. However, it should be borne in mind that there is a change in the sample of countries in this figure as more independent countries enter the data set over time. The green and blue lines show the trend over time for countries that have weak and strong executive constraints respectively. At the very beginning of the sample, there are actually more dynastic leaders in countries with strong executive constraints. However, this pattern is reversed by the end of the nineteenth century and throughout the twentieth century there are fewer dynastic leaders in countries with strong executive constraints.

In Table 1, we use data from Besley and Reynal-Querol (2011) to look at characteristics of dynastic and non-dynastic leaders. On the whole, non-dynastic leaders are more educated, being more likely to have a college degree and graduate qualification. Dynastic and non-dynastic leaders are equally likely to have studied abroad. Dynastic leaders come to office on average

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<sup>7</sup>This broadly similar to the findings for the U.S Congress where Dal Bo et al (2009) find that the 8.7% of new entrants have a previous political connection using data between 1789 and 1996. They also find that this proportion has not fallen much over time.

<sup>8</sup>It is interesting to relate whether a politician is dynastic to opportunities to replace leaders as captured by three PolityIV variables: (i) the extent of institutionalization – or regulation – of executive transfers (XRREG), (ii) the competitiveness of executive selection (XRCOMP), and (iii) the openness of executive recruitment (XROPEN). This summary variable takes values between 1 and 8, with 8 being the most open and competitive method of selection. This variable is strongly correlated with our measure of whether a politician belongs to a political dynasty. Around 5% of leaders are from dynasties in the political systems where the value of this dummy variable is 8 compared to 12.5% for the sample where the value of this variable is less than 8.

when they are younger. They tend to serve longer in office (almost double the length of time for dynastic compared to non-dynastic leaders). Non-dynastic leaders are more likely to come from a military background. Unsurprisingly, dynastic leaders are considerably more likely to belong to monarchies. In terms of careers, dynastic leaders are less likely to be lawyers, professors and scientists. But both groups have similar profiles in terms of being highly unlikely to come from a business background.

The strength of executive constraints plays a key role in the theoretical framework and our core measure comes from the Polity IV data base. The executive constraints variable (XCONST) captures how leaders are bound by institutional constraints. Limits on the chief executive may, for example, be imposed by any “accountability group” in the polity. In many democracies these constraints are imposed by the legislative and judicial branches of government. Other kinds of accountability groups are the ruling party in a one-party system, a council of nobles or powerful advisors in monarchies, and the military in coup-prone polities. We define this as a dummy variable which equals one if the country has the highest value of XCONST (equal to 7) when the leader comes to power and refer to this hereafter as *strong executive constraints*.<sup>9</sup>

In our sample of leaders, 46% of leader spells fall under strong executive constraints according to this definition. This actually increases rather modestly over our sample period; from around 40% in the nineteenth century to a little over 50% for the last twenty-five years of the sample. However, this reflects the fact that many new countries, which do not score highly on this measure, enter the data after World War II. Indeed, the *proportion* of countries in our sample with strong executive constraints actually falls after World War II in comparison to the inter-war period.

Table 2 compares the average growth performance of countries depending on whether the country has a leader from a political dynasty and whether it has strong or weak executive constraints. The results reveal a clear pattern with growth being lowest when there is neither a dynastic leader nor strong executive constraints. In this case, the average growth rate is 0.83%. This contrasts with a growth rate of around 2% in all of the other cases. An F-test (F=6.48, p-value 0.01) reveals that we can reject the null hypothesis

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<sup>9</sup>The degree of checks and balances between the various parts of the government is coded on a 7-point scale which ranges from “unlimited executive authority” (1) to “executive parity or subordination” (7).

that the mean growth rates are equal for the sample of dynastic and non-dynastic leaders in countries with weak executive constraints. However, we cannot reject that the average growth rates are the same when we compare countries with strong executive constraints by whether the leader is dynastic or not (F-test ( $F=0.06$ , p-value 0.80)). The theoretical model will discuss how this is consistent with a model of selection through dynasties.

### 3 Selection through Dynasties

We use an extremely simple adverse selection model to illustrate the main ideas and to motivate the empirical test.

While there are many simplifying features built into the model, it is based on two core ideas: (i) internal controls (executive constraints) lowers the economic cost of having incompetent leaders (ii) if internal controls are absent, then performance-related selection is valuable and will lead to selection through dynasties if there is a positive correlation of leadership competence within families.

**Basics** Time is infinite and denoted by  $t = 1, \dots$ . In each period a leader is in power whose quality affects economic performance. Leaders belong to dynasties and each leader is assumed to have a single offspring. There is a large pool of potential leaders and in each period, the offspring of the past leader is compared to a randomly selected “challenger”. For simplicity, we suppose that once a dynasty leaves power, its reputation is forgotten so all challengers look the same.<sup>10</sup>

**Leaders and Dynasties** Leaders differ in two dimensions both of which have a dynastic component: competence,  $\tau$ , which is partially inherited and (non-economic) popularity,  $\nu$ , which is completely inherited.

For competence, there are two types competent (C) and incompetent (I) with their type denoted by  $\tau \in \{C, I\}$ . A new dynasty’s first leader is competent with probability  $\pi$ . However, we assume that if a leader is competent, then the probability that his offspring is competent is  $q \in [\pi, 1]$ . Since  $q \geq \pi$ , there is positive intergenerational transmission of competence

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<sup>10</sup>This makes things simple and transparent. The core mechanism of selection would still work if challengers came with a dynastic “reputation” based on the performance of their forebears in office.

within a dynasty. Whether this is true in practice is an empirical question but it will be needed for dynasties to be formed on the basis of good economic performance. If a leader is incompetent, we assume that his offspring are incompetent for sure.<sup>11</sup>

Non-economic popularity is denoted by  $\nu \in [\underline{\nu}, \bar{\nu}]$  with  $\pi > \bar{\nu} - \underline{\nu} > q - \pi$ . This bound on shocks makes sure that economic competence is sufficiently important relative to non-economic popularity so that if it is relevant, it will become a salient dimension of choice. For any dynasty,  $\nu$  is drawn from a distribution function  $G(\cdot)$  which has mean zero. The same popularity accrues to all members of a dynasty regardless of the competence of the leader. We have in mind, a dynasty's social standing or connections. We denote the non-economic popularity of the dynasty in office at  $t$  by  $\nu_t$ .

**Institutions and National Income** There are two institutional settings depending on executive constraints, weak (W) and strong (S), denoted by  $\sigma \in \{S, W\}$ . National income depends on the type of the leader (good or bad) and executive constraints with:

$$y_t = Y - \Delta(\tau, \sigma) + \varepsilon_t \tag{1}$$

where the following matrix gives the payoff structure and its dependence on institutions and selection:

	$\sigma = S$	$\sigma = W$
$\tau = C$	$\Delta(C, S) = 0$	$\Delta(C, W) = 0$
$\tau = I$	$\Delta(I, S) = 0$	$\Delta(I, W) = \Delta > 0$

This is consistent with the raw facts in Table 2 since bad leaders impose a cost on output only when institutions are weak. In other words, losses in income are can be reduced in one of two ways, either by picking a competent leader or by putting internal controls in place.

Draws of  $\varepsilon_t$  in (1) are made in each leader spell with  $F(\cdot)$  and  $f(\cdot)$  being the distribution function and density of these shocks respectively. We assume that this shock has mean zero and is iid over time. We could allow  $Y$  to be time varying as in a Solow growth model so that shocks are around a trend in income rather than a level. In such cases, citizens will evaluate performance based on deviations from the trend.

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<sup>11</sup>This simplifies the argument. The key thing is that bad leaders need to have a greater chance of having offspring who would be incompetent leaders.

**Leadership Selection** Citizens live for one period and can choose their leader at the beginning of their lives. After observing the output level under the previous leader they can decide whether to appoint the offspring of that leader or try out the randomly selected “challenger” who will be a good leader with probability  $\pi$ .

We assume that the type of the past leader is not directly observable and has to be inferred from their performance while in office. Nothing is learned about leader quality under strong executive constraints since all leaders perform equally well. However, under weak constraints, citizens learn about the likely quality of his offspring by observing the level of output during his parent’s time in office,  $y_{t-1}$ .

Let  $\Pi_{t-1}$  denote the probability that the previous leader was competent when he took office. Using Bayes rule, If he produced output  $y_{t-1}$ , the probability that his offspring will be competent is

$$\frac{q\Pi_{t-1}}{\Pi_{t-1} + (1 - \Pi_{t-1})\lambda(y_{t-1})} \quad (2)$$

where

$$\lambda(y) = \frac{f(y - Y - \Delta)}{f(y - Y)}$$

is the relevant likelihood ratio which we assume to be a *decreasing* function of  $y$ , i.e. higher output levels are relatively less likely to have been generated by bad leaders.<sup>12</sup>

In each period, the payoff of a citizen is

$$Y_t + \nu_t\Delta.$$

Note that we have scaled non-economic popularity to be comparable to competence by multiplying it by  $\Delta$ .

**Timing** The timing of the model unfolds as follows:

1. The offspring of the previous leader has reputation for competence,  $\Pi_t$ , and non-economic popularity,  $\nu_{t-1}$ , which he “inherits” from his parent.
2. Nature determines the popularity of the challenger  $\hat{\nu}_t$  drawn at random from  $[\underline{\nu}, \bar{\nu}]$ .

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<sup>12</sup>The monotone likelihood ratio property holds for a wide variety of well-known statistical distributions.

3. Citizens alive at  $t$  choose whether to appoint the leader's off spring or pick the challenger who is competent with probability  $\pi$ .
4. If the leader is from a new dynasty then  $\nu_t = \hat{\nu}_t$  and if the leader is from the existing dynasty then  $\nu_t = \nu_{t-1}$ .
5. Period  $t$  output is realized and beliefs are updated according to (2) to yield  $\Pi_{t+1}$ .

We will look for a Bayesian equilibrium where citizens selection decisions depending on realized output in the previous generation.

**Establishing a Political Dynasty** Consider the decision by citizens of whether to appoint the offspring of a leader whose reputation for competence was  $\Pi$  and institutions are  $\sigma \in \{S, W\}$ . If the previous leader produced output  $y_{t-1}$ , then expected utility with his offspring is:

$$V^D(y_{t-1}, \Pi, q, \nu, \sigma) = Y - \frac{(1 - \Pi) \lambda(y_{t-1}) - \Pi(1 - q)}{\Pi + (1 - \Pi) \lambda(y_{t-1})} \Delta(I, \sigma) + \nu \Delta$$

where beliefs about the competence of the offspring have been updated using Bayes rule. The second term in this expression is the expected loss if the leader's offspring turns out to be incompetent.

Selecting the challenger from a fresh (potential) dynasty yields a payoff of:

$$V^N(\pi, \sigma, \hat{\nu}) = Y - (1 - \pi) \Delta(I, \sigma) + \hat{\nu} \Delta.$$

A dynasty will therefore be created if and only if

$$V^D(y_{t-1}, \pi, q, \nu, \sigma) \geq V^N(\pi, \sigma, \hat{\nu}).$$

Now define  $\hat{y}(\Pi, \pi, q, \nu, \hat{\nu})$  from

$$\lambda(\hat{y}(\Pi, \pi, q, \nu, \hat{\nu})) = \frac{\Pi[q - \pi + \nu - \hat{\nu}]}{(\pi + \hat{\nu} - \nu)(1 - \Pi)}.$$

This defines a critical performance level for a dynasty under weak executive constraints. It is straightforward to check that  $\hat{y}(\Pi, \pi, q, \nu, \hat{\nu})$  is increasing in  $(\pi, \hat{\nu})$  and decreasing in  $(q, \Pi, \nu)$ . We now have:

**Proposition 1** *Political selection depends on institutional arrangements as follows*

1. If  $\sigma = S$ , then competence is irrelevant and selection depends entirely on  $\nu - \hat{\nu}$  with the most popular leader being chosen.
2. If  $\sigma = W$ , then selection depends on the realization of output under the previous leader with a dynasty being continued if and only if  $y \geq \hat{y}(\Pi, \pi, q, \nu, \hat{\nu})$ .

The Proposition describes a pure selection effect whose strength depends on  $q - \pi$  the extent of inter-generational transmission of competence. If the dynasty is of higher quality and/or it has a better initial reputation, then a lower performance threshold is applied for a dynasty to be formed. A more popular dynasty also has a lower performance threshold. On average dynastic leaders perform better than non-dynastic leaders when executive constraints are absent. There should be no link between performance and dynastic leaders when executive constraints are strong.

Under strong executive constraints, the probability that a dynasty forms (or survives) depends solely on the balance of popularity between the incumbent and challenger. The current dynasty will be retained if and only if  $\nu_{t-1} \geq \hat{\nu}_t$ . From an ex ante point of view, the probability that a dynasty with popularity  $\nu_{t-1}$  survives is  $G(\nu_{t-1})$ . Thus dynastic leadership will persist over time until a more popular leader comes along.

Under weak executive constraints, the probability that a dynasty survives depends on the realization of  $y_{t-1}$  as well as the leader's popularity. The ex ante probability that a dynasty will continue, i.e. the leader's offspring is chosen to be in power if he has popularity  $\nu_{t-1}$ , reputation  $\Pi_{t-1}$  and economic performance was  $y_{t-1}$  is

$$G\left(\nu_{t-1} + \left[\frac{\Pi_{t-1}q}{\Pi_{t-1} + (1 - \Pi_{t-1})\lambda(y_{t-1})} - \pi\right]\right).$$

The second term is the selection on performance term.

A more established dynasty, i.e. with a more established reputation for competence, is more likely to survive for any given level of performance  $y_{t-1}$ . Hence, a stronger reputation created by past members of a dynasty provides a cushion for holding onto power since the performance threshold for continuation of the dynasty is laxer. So with dynasties, there is a sense in which "power-can-beget-power" which squares with empirical results in Dal Bo et al (2009).

**Review of Key Assumptions** The model has made three rather stark assumptions to illustrate the role of selection on competence in the formation of a political dynasty. They could be relaxed at the expense of complication without affecting the main logic of the model.

First, we have assumed that popularity shocks are permanent within the dynasty. So a popular dynasty becomes hard to unseat even when economic competence is not an issue. This could, for example, explain the Bush dynasty in the U.S.. But we could easily add some kind of mean reverting popularity shock to create the possibility of a dynasty ending due to non-economic factors.

Second, we have assumed that strong executive constraints completely take away the issue of economic incompetence. This is likely to be an exaggeration and a more continuous model of such constraints could be used to motivate the argument that stronger constraints diminish, but do not eliminate, the importance on selection on economic competence through dynasties.

Third, the only source of learning about politician quality comes from having a parent who was a leader. In practice, there is a range of political careers in lower office which could serve as the basis of establishing a political reputation which can be “inherited” by a candidate for high office. It would be straightforward to allow for a challenger also to face the leader’s offspring with a reputation inherited from his or her forebears.

The story that the model illustrates rests on believing that competence concerns in economic management are less important than other factors when picking leaders when executive constraints are weak and this is the implication of the model that we take to the data along with auxiliary prediction that persistence of dynasties should be related to past performance.

**Choice of Institutions** The set up of our model takes the choice of institutions  $\sigma \in \{S, W\}$  as exogenous; we are not here trying to explain endogenous institutional transitions. The pattern over time is towards creating stronger executive constraints and there is a legitimate concern that the forces shaping this are co-determined with the forces that affect growth even though the evidence of an empirical link between strong executive constraints and growth is quite weak (see Glaeser et al, 2007). Indeed, we will confirm this finding once we include country dummies in the regressions below.

At a theoretical level, the persistence of weak executive constraints sug-

gests that there are forces which prevent change towards what rank and file citizens want. Many countries have powerful entrenched elites who earn rents and have a strong desire not to relinquish political power. Even if power circulates across dynasties within the elite, collectively the elite may wish to prevent strong constraints which may reduce their access to rents. If there were costs of maintaining their monopoly on power (e.g. through repression) then this would be feasible as long as these costs are not too low.

Theories of institutional change such as Acemoglu and Robinson (2006, 2012) and Besley, Persson and Reynal-Querol (2013) emphasize how events which either increase the prospect of a revolution and/or increase in political instability can lead to institutional change. The identifying assumption of the empirical work below is that these critical junctures are orthogonal to the process creating the ebb and flow of dynastic leaders and their role in maintaining a better growth performance in the economy.

## 4 Empirical Implications

The core idea in the model is that dynasties can serve as a selection device when there are weak internal controls on leaders. Moreover dynasties will survive only when their economic performance is strong enough. We should observe stronger economic performance among countries with dynastic leaders due to this selection process and the survival of dynasties should be related to their economic performance.

**Economic Performance** Suppose that we are interested in studying the economic performance under leader  $\ell$  in country  $c$  at time  $t$ . We can think of  $Y_{ct}$  as a (country-specific) Solow fundamental of the country and allow for common global technology shocks through year dummies. We also allow for the possibility of convergence by estimating a growth model.

We consider the economic performance of a leader during his/her spell in office. Our core empirical specification is therefore:

$$g_{\ell ct} = \alpha_c + \alpha_t + \lambda y_{ct} + \beta_1 \delta_{\ell ct} + \beta_2 \sigma_{\ell ct} + \beta_3 (\delta_{\ell ct} \times \sigma_{\ell ct}) + \varepsilon_{\ell ct} \quad (3)$$

for leader  $\ell$  in country  $c$  who takes office at date  $t$ , where:  $\alpha_c$  are country dummies,  $\alpha_t$  are year dummies,  $g_{\ell ct}$  is the average growth rate during the leader's spell in office,  $y_{ct}$  is the level of income per capita in the year before the leader's spell in office starts,  $\delta_{\ell ct}$  is a dummy variable which is equal to

one if the leader belongs to a dynasty and  $\sigma_{lct}$  is a dummy variable which is equal to one if a country has strong executive constraints when the leader comes to power. We cluster the standard errors at the country level.<sup>13</sup>

According to our theory, we should expect  $\beta_1 > 0$ ,  $\beta_2 > 0$  and  $\beta_3 < 0$  with a core implication of the theory being that  $\beta_1 + \beta_3 = 0$ , i.e. having a dynastic leader generates better performance only when executive constraints are weak.

This empirical exercise will take variation in institutions as exogenous conditional on year and country fixed effects. Below, we will find that  $\beta_2$  in equation (3) is not significant in each of our specifications once we include country fixed effects suggesting that fixed-in-time country characteristics may do a decent job in conditioning out the relevant unobserved heterogeneity associated with institutional differences. Moreover, by including country fixed effects, we are far more cautious than the majority of the previous literature studies on institutions where the main source of identification tends to be purely cross-sectional.

**Persistence of Dynasties** The model also predicts that the persistence of a dynasty depends upon the performance of its leaders while in office. Modelling the determinants of dynastic persistence will also allow us to think about about the endogeneity of  $\delta_{lct}$  in equation (3). And below, we will consider a two-stage (IV) procedure.

Let  $p_{lct}$  be the probability that the leader  $l$  in country  $c$  who takes office at date  $t$  is from a dynasty. Then the theoretical model suggests modeling this as:

$$p_{lct} = H(\theta_c + \theta_t + \gamma_1 g_{lct-1} + \gamma_2 \sigma_{ct-1} + \gamma_3 z_{lct} + u_{lct}; \delta_{lct-1}) \quad (4)$$

where  $u_{lct}$  is a dynasty-specific non-economic popularity shock from the theory,  $g_{lct-1}$  is a measure of past growth and  $z_{cjt}$  are other exogenous variables which affect the choice of dynastic leaders but do not economic performance directly. The variable  $\delta_{lct-1}$  denotes whether the previous leader was from the same dynasty. We include country dummy variables  $\theta_c$  and dummy variables for the year in which the leader comes to power.

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<sup>13</sup>This specification is fairly standard for a growth regression in panel data and the long time series (an average of 11 observations (leaders) per country) means that the standard dynamic bias from including lagged income should not be an issue.

This makes clear that the key assumption that identifies equation (3) is that past variables affecting  $\delta_{lct}$  are pre-determined and that shocks which determine whether there is a dynastic leader,  $u_{lct}$ , are uncorrelated with the leader's competence as reflected in their growth performance on  $y_{ct}$  and  $z_{lct}$ . In other words, these shocks are non-economic popularity of leaders and challengers as in the theoretical model above.

## 5 Economic Performance

We begin presenting the core results. We then assess their robustness. We also examine supporting evidence from policy measures.

### 5.1 Growth

**Core Results** The core results are report in Table 3. In column (1) we analyze the relationship between growth and having a dynastic politician in office in the basic specification which excludes lagged income and year and country dummies. These show a positive correlation between the growth rate and having a dynastic politician, but only when there are weak institutional constraints. The F-test reported in the sixth row of the table tests the hypothesis that there is no effect on growth from having a dynastic politician when institutions are strong. It shows that this cannot be rejected. The size of the coefficient suggests that, in a country with weak executive constraints, going from a non-dynastic leader to a dynastic leader, increases the annual average economic growth of the country by 1.33 percentage points per year.

In column (2) we include the log of per capita income in the year before the leader spell starts. This allows for convergence in a fairly standard way. We find that result holds up although this additional variable is not significant in the regression. Our main finding is also present in column (3) where we include year dummy variables to capture global macro-economic shocks and trends. Column (4) adds country dummies which allow us to control for time-invariant country characteristics. The correlation between being a dynastic politician and economic growth remains positive and significant for countries with weak executive constraints with growth being around 1.7% higher when there is a political dynasty under weak executive constraints. This is very similar to the number found in the raw data presented in Table 1. It is worth noting that strong executive constraints are not themselves significant once

we include both year and country dummies.

In column (5) and (6), we look at separate sub-samples according to the strength of institutional constraints. This allows separate year and country dummies to be estimated for each subgroup. In line with the findings of the previous columns, having a dynastic politician increases the average annual economic growth by 1.7% when institutions are weak but there is no significant correlation when executive constraints are strong.

In column (7), we respond modestly to the concern that the process determining institutional change in our data could be playing a direct role in the results. We have 87 institutional transitions between strong and weak executive constraints in our data. In column (7), we drop all leaders who presided over an institutional change along with all those for whom there was an institutional change in their first two years or last two years in power. We want to be sure that this group of 148 leaders are not driving the results. The results in column (7), which use the same specification as column (7) confirm that this is not the case.

Overall the results indicate that, when there are weak constraints in the executive, dynastic leaders tend to perform better than non-dynastic leaders. This lines up with the core prediction of our model as expressed in Proposition 1.

We now assess the robustness of these results to a variety of alternative specifications and ways of looking at the data.

**Alternative Measures of Dynasties** We first assess whether results in Table 3 are sensitive to different ways of classifying a leader as belonging to a political dynasty. We consider two alternatives – one narrower and one broader.

The narrower definition assigns a leader to a political dynasty only if the leader’s father held public office. Just 9% of our leaders fall into this category. The result reported in column (1) of Table 4 shows that the findings in Table 3 are robust to this narrower definition.

Column (2) uses a wider definition for belonging to a dynasty, specifically whether a leader’s father, mother, grandfather, uncle, brother, cousin, spouse, or brother-in-law has held (or holds) a political position. We categorize 11.3 % of our leaders as dynastic on this basis. The correlation between this variable and growth performance is reported in (2). The result is essentially the same as in Table 3 and we also cannot reject no effect from

belonging to a political dynasty when executive constraints are strong.

**Additional Controls** In column (3) of Table 4, we include the age and tenure (in years) of leaders as controls. This deals with a possible concern that dynastic leaders are different in other ways that are simply correlated with being part of a political dynasty. As we have already seen, dynastic politicians tend to stay longer in office, and tend to be younger when they take up their position. There is a positive and significant correlation between the tenure of a leader and average economic growth during the leader’s spell in office. There is no significant correlation with the age at which the leader is selected. The core results in Table 3 remain.

Column (4) of Table 4 checks whether the results are robust to excluding all leaders who have served less than two years in office since, arguably, they are likely to have had few opportunities to affect the growth rate. The core result from Table 3 also remains in this case.

**Matching on Observables** Columns (5) and (6) in Table 4 report results from using a matching estimator. The basic idea is that, for each leader who is from a political dynasty, we will select a comparison group of other leaders whose observables (covariates) are similar even though they are not dynastic politicians. We then estimate an average treatment effect of being a dynastic leader comparing dynastic leaders to the matched “control” sample. The key assumption, as ever, is that assignment to the treatment group is independent of the outcomes, conditional on the other covariates, i.e. selection is solely on observables.

The variables that we use to identify similar leaders in similar situations comprise a selection of leader and country characteristics. We will also include region and time dummy variables, the latter being dummies for each quarter century between 1850 and 2004. For leader characteristics we use the leader’s age, a dummy for whether the leader has a postgraduate qualification, and a dummy for whether he/she has studied abroad; all of these variables are from Besley and Reynal-Querol (2011). For country characteristics, we use the log of the population of the country the year before the leader assumes office, a dummy variable for whether there is open executive recruitment in the year in which the leader comes to power.<sup>14</sup> The results are

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<sup>14</sup>Following a suggestion of Abadie et al. (2001), we use 4 matches who that "4 matches seem to offer the benefit of not relying on too little information without incorporating

presented for two sub-samples, depending on whether executive constraints are weak or strong. Columns (5) and (6) differ solely according to whether time effects are included.

The results indicate in line with columns (5) and (6) in Table 3, that having a dynastic politician in office is correlated with an increase in growth only in countries with weak executive constraints. Moreover, the size of the effect is very similar.

**Including Education as a Control** Institutions such as executive constraints could be correlated with other variables which affect economic performance. One powerful and important hypothesis concerns the role of human capital in making democracy sustainable. Indeed, it is sometimes argued that correlations between institutions and performance are suspect when human capital levels are controlled for (Glaeser et al, 2007). Thus it is interesting to explore this for our results.

Due to the difficulty of obtaining reliable education data at the country level for longer periods of time and a wide range of countries, we now focus on period after 1960. The first three columns in Table 5 establish that the findings from the core specification are robust when looking only at the post 1960 period although the effect of having a dynastic leader is somewhat smaller (around 1.2%).

Columns (4) through (6) add the average years of education in the population over age 25 from the Barro and Lee (2001) data set. The coefficient on education is not significant (principally due to the inclusion of country fixed effects). But the core finding of the paper is the same with growth being higher when a dynastic leader serves under weak executive constraints.

**A Placebo Test** Our theoretical model is specifically about the role of a particular dimension of institutions, namely executive constraints. We should not therefore expect heterogeneity in the correlation between growth and dynastic leadership when we look at the overall democracy score which includes measures of the competitiveness of elections and/or openness of executive recruitment. Equally, it should not be the means of acquiring power, whether through an election or not, that matters to whether dynasties are successful. Thus, as a placebo test, we show that we do not get results

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observations that are not sufficiently similar". All results use heteroscedasticity consistent standard errors. In addition, the bias-corrected matching estimator is used.

linking dynasties and growth when either the full democracy score or whether a leader is elected is used as a measure of the institutional environment.

The results are in Table 6. In columns (1) through (3), we use the overall polity score of a country and classify a country as democratic if this score exceeds 5. The pattern of coefficients that we find in the core specification using executive constraints as an institutional measure is not present. Columns (4) through (6) use as a measure of democracy whether the leader in question was elected in the first place. Here too, we do not find an impact of institutions varying with whether or not the leader is from a political dynasty.

These results show that there is evidence for a specific way in which institutions interact with being a dynastic politician as suggested in the theory rather than some generalized result for more or less democratic political institutions.

## 5.2 Policy

Since we are positing that leaders affect growth, then we would expect this to work via policies that are implemented. We now explore whether there is evidence for this focusing on policies that are thought to affect growth.

**Government Anti-diversion Policies** One way to interpret the productivity enhancing decisions that governments make is improvements in the enforcement of contracts and support for markets. If these are important for growth as argued, for example, by Hall and Jones (1999), we should expect a similar pattern of results when we use this as a dependent variable.

To investigate this, we look at the composite index of government anti-diversion policies (GADP) as created from the International Country Risk Guide Data (ICRG) by Hall and Jones (1999) and Knack and Keefer (1995) who use an average of five variables. The exact variable is an equally-weighted average of law and order, bureaucratic quality, corruption, risk of expropriation, and government repudiation of contracts. These data are available only between 1982 and 1997. We normalize the variable to lie between zero and one with higher values representing more effective policies to support production.

The specification that we estimate is:

$$GADP_{lct} = \alpha_c + \alpha_t + \beta_1 \delta_{lct} + \beta_2 \sigma_{lct} + \beta_3 (\delta_{lct} \times \sigma_{lct}) + \varepsilon_{lct} \quad (5)$$

for leader  $\ell$  in country  $c$  beginning at date  $t$ , where:  $\alpha_c$  are country dummies,  $\alpha_t$  are year dummies,  $GADP_{\ell ct}$  is the GDP value during the last year of the leader’s spell in office<sup>15</sup>. As above, we cluster the standard errors by country.

The results are reported in Columns (1) and (2) in Table 7. In column (1) we include year and country dummies and in column (2), country dummies are replaced by region dummies. The picture is fairly clear. As in the core results, there is a positive correlation when the leader is from a political dynasty but there is no significant correlation when executive constraints are strong. So the pattern found for government anti-diversion policies parallels that found in data on growth.<sup>16</sup>

**Infrastructure quality** Our second policy measure also reflects something which arguably has a significant impact on growth, namely infrastructure quality. The most readily available data on this are from the Business Environment Risk Intelligence (BERI) data which are available between 1972 and 1990. Knack and Keefer (1995) shows that a high correlation between an index of these BERI measures and higher investment and growth rates. This infrastructure quality variable that we use specifically tries to capture the quality of available facilities affecting communication and transportation within a country. We normalize the measure to lie between 0 and 1.

The specification that we estimate is:

$$IQ_{\ell ct} = \alpha_c + \alpha_t + \beta_1 \delta_{\ell ct} + \beta_2 \sigma_{\ell ct} + \beta_3 (\delta_{\ell ct} \times \sigma_{\ell ct}) + \varepsilon_{\ell ct} \quad (6)$$

for the spell in office of leader  $\ell$  in country  $c$  beginning at date  $t$ , where:  $\alpha_c$  are country dummies,  $\alpha_t$  are year dummies,  $IQ_{\ell ct}$  is the BERI infrastructure quality variable during the last year of the leader’s spell in office<sup>17</sup>. We continue to cluster the standard errors by country.

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<sup>15</sup>We choose this criteria in order not to lose leaders whose spell ends after 1995.

<sup>16</sup>We also attempted to update this variable to 2008. However, some of the variables in the original ICRG are no longer reported. However, we can construct something which is fairly close; specifically we take the average of corruption, law and order, quality of bureaucracy and investment profile, normalized to lie between zero and one. ( Expropriation risk and repudiation of contracts have been replaced in the later data by a new investment profile variable. If we repeat the specifications of columns (1) through (2) of Table 7, the results with country dummies are weak, but with regional dummy variables, the results are similar to those in columns (1) and (2).

<sup>17</sup>We choose this criteria in order not to lose leaders whose spell ends after 1990.

The results are columns (3) and (4) in Table 7. In column (3) we show that with country and time dummies, there is a positive and significant correlation between having a politician in office from a political dynasty and infrastructure quality when executive constraints are weak. However, we cannot reject the hypothesis that there is no correlation when executive constraints are strong. The findings are broadly similar in column (4) where we exploit only within-region variation.

## 6 The Persistence of Dynasties

We now explore the what determines the the perpetuation of dynasties empirically. We do so in two related ways. First, we study the continuation of dynastic leadership using annual data for all country-year observations in which a dynastic leader is in office. Second, we model the probability that a given leader is dynastic as in equation (4). This will allow us to instrument for dynastic leadership in equation (3).

**The Survival of Dynasties** The core specification in this case is

$$\delta_{\ell cs} = \theta_c + \theta_s + \kappa_1 \bar{g}_{\ell cs} + \kappa_2 z_{\ell cs} + \eta_{\ell cs} \text{ if } \delta_{\ell cs-1} = 1. \quad (7)$$

where  $\delta_{\ell cs}$  denotes whether leader  $\ell$  in country  $c$  in year  $s$  is from a dynasty,  $(\theta_c, \theta_s)$  are country and year dummies  $\bar{g}_{\ell cs}$  is the average growth rate over the previous five years and  $z_{\ell cs}$  are other determinants of dynastic leadership which we outline below. We expect the coefficient on growth  $\kappa_2$  to be negative. The reason for modeling this on annual data is that, unlike the theoretical model, there is no fixed date at which a leader's term comes to an end. So a survival analysis seems more natural.

We have two candidate variables for  $z_{\ell cs}$ . The first of these exploits the fact that succession in dynasties is often through the male-line. This suggests that dynasties are more likely to survive when there is a male heir. Moreover, we can explore also whether it matters whether the male is first born. The former should be exogenous to whether or not a leader is dynastic as it is determined by nature. This data is collected from similar sources to the other data in our sample. The information comes mainly from the *Encyclopedia of Heads of States and Governments*, *Oxford Political Biography: Who is Who in the Twentieth Century World Politics*, *Encyclopedia Britannica*, other

online sources, and biographies contained in *Lexis-Nexis*. However, we have only been able to find this for a smaller set of leaders.

The second, explores the possibility that there are shocks which make dynastic leaders attractive in times of national need such as after a natural disaster. The variable that we use is the number of natural disasters during the past five years. Why natural disasters should matter, is not completely clear but the results below suggest that there could be a preference for stability and familiarity when disasters strike. The exact measure of natural disasters that we use to obtain this finding comes from the EM-DAT data base. Following Besley and Persson (2011) we create a measure of natural disasters based on extreme temperature events, floods, slides and tidal waves. We augment this with the number of earthquakes which score higher than 7.5 on the Richter scale using data from the NOAA National Geophysical data center. Our core variable adds the number of events in a particular country during any given year.<sup>18</sup>

The results from estimating (7) are in Table 8. Column (1) of the Table confirms that there is a negative association between the survival of the dynasty and growth performance. The magnitude of the effect suggests that a 2% point change in growth over the past five years leads to a 3.3% fall in the probability that any dynasty comes to an end in any year. Since the unconditional probability of this happening is around 15%, this says that the probability of the dynasty coming to an end in any given year increases by a fifth when growth falls by 2%. Column (2) confirms that this finding is driven by countries that have weak executive constraints – we cannot reject that there is no relationship between the end of a dynasty and poor performance for countries with strong constraints. The size of the effect is marginally larger with a 2% increase in growth associated with a 4.4% reduction in the probability of a dynasty ending.

In column (3), we add as a regressor whether a dynastic leader has a son and the number of natural disasters, as defined above, during the past five years. Having a son is not significant. However having the number of natural disasters is negative and significant, reducing the probability that a dynasty falls. Column (4) looks at interactions between these variables and strong executive constraints. The core result linking growth to survival of dynasties remains and we cannot reject the hypothesis that there is no effect

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<sup>18</sup>There is evidence from the U.S., for example Gasper and Reeves (2011), that natural disasters actually create anti-incumbent bias.

when executive constraints are strong.

In column (5) of Table 8, we check whether the growth performance over the previous five years predicts the transition into dynastic leadership from non-dynastic leadership, i.e. we estimate an equation along the lines of (7) for transitions into having a dynastic leader conditional on having a non-dynastic leader. This is a kind of placebo test as our theory suggests that that growth performance should not predict this and the the results show that there is no significant correlation with any of the variables that we used in column (3) to predict transitions out of dynastic leadership.

We now focus on a particular well-defined example of dynastic decline, the end of monarchy. In our sample, we have a number of countries which abolished their monarchies during our time period. We measure whether a country is a monarchy using the variable “XROPEN” in the PolityIV data. Thus we estimate (7) where  $\delta_{\ell cs}$  denotes whether leader  $\ell$  in year  $s$  in country  $c$  is a monarch. In column (6) of Table 8, we find that monarchies are more likely to end when there is poor growth performance under the previous monarch. All of the monarchs who were the last in their blood line have sons according to our data. But it is possible that the pool of potential successors is wider when they have more sons. The coefficient on this variable suggests that a leader when a monarch has more sons, then the monarchy is more likely to survive. We can think of greater choice of successors corresponding to a higher value of  $q$  in the theory. There is no significant correlation between the end of monarch and the number of natural disasters in the past five years.

Overall, while the sample of leaders who make this transition from monarchy is quite small (and all such cases are coded as having weak executive constraints), the evidence is consistent with what we found on transitions out of dynastic leadership in general.<sup>19</sup> The growth effect for monarchy is now quite sizeable with a 2% increase in growth under the previous monarch making it 14.5% less likely in any year of a monarch’s reign that the monarchy is abolished.

Taken together, the evidence presented is consistent with a key part of the mechanism in the model, namely that the continuation of dynastic lead-

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<sup>19</sup>The set of monarchies in column (8) and the dates at which they are end: Brazil (1889), Haiti (1986), Iran (1979), Morocco (1961, 1977), Nepal (1957, 1962), Yemen (1962). If we do not include the number of sons, we have a slightly larger sample and the growth result remains. The additional countries/years are: Denmark (1849), Netherlands (1848), Norway (1873), Sweden (1870) and Yugoslavia (1934).

ers where executive constraints are weak, is associated with good economic performance by the dynasty.

**Two-stage Estimation** Finally, we use an IV specification to address the concern that dynasties are endogenous. Here we use a specification which aims to predict whether a specific leader who comes to power at date  $t$  is dynastic.

Motivated by the theory and the empirical results on dynastic survival in Table 8, we will use growth under the past leader, whether there is a male heir and whether a natural disaster has occurred as instruments. Note, however, that unlike Table 8, we are once again looking at leader spells rather than the annual probability of exit from being a dynastic leader. Specifically, we model whether leader  $\ell$  in country  $c$  who comes to power at date  $t$  is from a dynasty as the following linear probability model.

$$\delta_{\ell ct} = \theta_c(\sigma_{\ell ct}) + \theta_t(\sigma_{\ell ct}) + \gamma(\sigma_{\ell ct})z_{\ell t-1} + \lambda(\sigma_{\ell ct})y_{ct} + \eta_{\ell ct}$$

We will estimate this relationship separately for countries with low and high executive constraints so all estimated parameters depend institutions measured at the point that the leader comes to power  $\sigma_{\ell ct}$ . As above,  $\theta_c$  and  $\theta_t$  are country and year fixed. The instruments are  $z_{\ell t-1}$  which are measured for the *previous* leader and will include growth performance, natural disaster incidence and whether he has a male heir. Initial GDP per capita,  $y_{ct}$ , is also used as an exogenous variable and hence is include in the first and second stage.

The results are in Table 9. In each pair of columns, we report the first and second stage regressions of an IV specification. All of these include country and year dummies.

The first two columns are for countries with weak executive constraints. In column (1), the outcome is growth and the only instrument is whether there was a natural disaster up to five years prior to the leader assuming office. The natural disaster variables are jointly significant with an F-statistic of 2.44. However, the only individual coefficient which is significant is having a natural disaster right before the leader assumes office suggesting a short term popularity shock for dynastic leadership. The second stage in column (1) finds a positive correlation with growth from a dynastic leader in office and parallels the finding in the just in the core OLS results of Table 3.

Columns (3) and (4) presents results from running the same specification estimated on the sample of leaders who entered office when executive constraints are strong. The first stage no longer predicts whether a leader is dynastic and, as in the core results, there is no significant effect of being a dynastic leader on growth.<sup>20</sup> Thus, the result does appear confined to the low executive constraints sub-sample in line with the core finding.

Columns (5) through (10) look at the robustness of the findings in columns (1) and (2) to alternative specifications and choices of instruments.

Column (5) report results which also includes the average growth rate of the previous leader as an instrument. As column (6) shows, the point estimate on this variable is negative but it is not statistically significant. However, the natural disaster variable remains significant and the F-test on the instruments jointly is above 2. The core second-stage finding reported in column (1) is robust.

Column (7) now includes whether the previous dynastic leader had a son as a regressor at the first stage. The sample size is now quite a bit smaller due to the fact that we have much less complete data. This additional instrument is not significant and the instruments look rather weaker even though the relationship between having a dynastic leader and growth holds up.

There may be a concern that natural disasters, which are the strongest instrument, are affecting the outcome of interest directly and so violate the exclusion restriction. We therefore check in columns (9) and (10) whether the number of natural disasters during a leader's spell in office has a direct effect on growth. Although the correlation of interest is somewhat weaker (only being significant at 10%) the core findings basically hold up. Moreover, natural disasters during a leader's term in office do not seem to predict growth. This is in line with the literature on natural disasters such as Fomby et al (2011) which suggests that the empirical relationship between growth and disasters is far from clear.<sup>21</sup>

The fact that natural disasters seem to drive a preference for keeping a dynastic leader does provide some potential for a two-stage estimation approach. However, we regard the results in Table 9 as suggestive rather than

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<sup>20</sup>Note however, that correlation between having a disaster in the year prior to the leader taking office and whether or not the leader is dynastic is statistically indistinguishable across the sample of strong and weak executive constraints samples.

<sup>21</sup>Note also that there is no significant correlation between having a natural disaster at  $t$  according to our definition and the growth rate at time  $t$ .

providing a compelling causal effects. Notwithstanding, taken together with the overall picture in the data, they are consistent with the core theoretical model in which dynasties serve a selection role when executive constraints are weak.

## 7 Concluding Comments

This paper argues that political selection through dynasties can serve as a means of improving economic performance when executive constraints are weak. We have formalized this idea in a simple model and tested it using a unique data set on political leaders. There is robust evidence that dynastic leaders in countries where executive constraints are weak perform better than non-dynastic leaders. With strong executive constraints, there is no apparent role for selection through dynasties. So over time, as countries improve their governance, we expect leaders from dynasties to decline, consistent with the pattern in the data.

The focus of the analysis has been on dynasties as a means of selecting leaders. There is a complementary view that dynasties also change the time horizon of incumbents and hence change incentives as in the classic political agency model of Barro (1973).<sup>22</sup> This feature could be added to the theoretical framework and add further richness to the predictions, especially as networks decay creating term-limit like effects. This issue would be interesting to explore in future work.

The paper adds to wider debates about the role of dynasties as a form of political network. The emergent view is that because dynasties constitute a barrier to entry, then they are likely to compromise effective policy making. The results here don't contradict the general principle that open access to power is likely to serve a polity better. And networks may transform themselves focusing on elite universities rather than families as polities mature.

The paper also adds to the literature that looks at heterogeneity in categories like "democracy" when mapping political institutions into economic performance. Dynastic networks are a form of informal institution which does not show up in the categorization of formal institutions. It therefore

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<sup>22</sup>See Besley (2006) for a review of the literature and Olson (1993) on the implications of this view for the perpetuation of monarchies.

adds further legs to the agenda which looks in more detail at institutional detail and how it relates to economic performance.

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**Table 1: Leader Characteristics**

	<b>Dynastic leader</b>	<b>Non-dynastic leader</b>
Education (graduate)	0.20	0.29
Education (college)	0.55	0.74
Studied abroad	0.30	0.26
Age in first year holding office	44.7	53.0
Length of Tenure	10.0	4.7
Served in Military	0.04	0.22
Elected/selected under democracy	0.45	0.57
Monarch	0.49	0.01
Career as Lawyer	0.09	0.26
Career as Professor and/or scientist	0.03	0.12
Career in Business	0.03	0.05

**Notes:** A leader is dynastic leader if a leader's father, grandfather or mother held an elected position. Education (graduate) is a dummy that is equal to one if the leader has a graduate degree; Education (college) is a dummy that is equal to one if the leader has a college degree; Studied abroad is a dummy equal to 1 if the leader studied abroad; Served in Military is a dummy equal to 1 if the leader was a military professional before holding office; Monarch is a dummy equal to 1 if the leader is a monarch. Career as Lawyer is a dummy equal to 1 if the leader was a lawyer before holding office. Career as a Professor and/or Scientist is a dummy that is equal to 1 if the leader was a Professor or Scientist before holding office. Career in business is a dummy that is equal to 1 if the leader was in business before holding office.

**Table 2: Mean Differences in Growth**

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	Weak Executive Constraints	Strong Executive Constraints
No political dynasty	0.83 (0.17)	1.92 (0.16)
Political dynasty	2.17 (0.50)	2.10 (0.60)

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**Notes:** The value shows the average growth performance of countries depending on whether the country has a leader from a political dynasty and whether it has strong or weak executive constraints (defined by xconst being equal to 7 in the Polity IV data base). A leader is dynastic leader if a leader's father, grandfather or mother held an elected position.

**Table 3: Core Results**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
					Weak Executive Constraints	Strong Executive Constraints	
Dynastic Leader	1.33*** (0.46)	1.29*** (0.47)	1.42*** (0.47)	1.74*** (0.57)	1.73** (0.71)	0.21 (0.49)	1.83*** (0.60)
Strong Executive Constraints	1.08*** (0.26)	1.28*** (0.31)	1.54*** (0.31)	0.63 (0.47)			1.17* (0.63)
Interaction	-1.15** (0.56)	-1.11* (0.58)	-1.17** (0.55)	-1.41** (0.71)			-1.12 (0.80)
Initial GDP per capita		-0.13 (0.13)	-0.10 (0.15)	-2.84*** (0.59)	-2.85*** (1.05)	-4.44*** (1.06)	-3.36*** (0.68)
Year dummy variables			Yes	Yes	Yes	Yes	Yes
Country dummy variables				Yes	Yes	Yes	Yes
F test (p-value)	0.26 (0.61)	0.24 (0.62)	0.36 (0.55)	0.42 (0.52)			1.05 (0.30)
Observations	1681	1637	1637	1637	774	863	1489
R-squared	0.0139	0.0164	0.2224	0.3525	0.4486	0.4350	0.3669

**Notes:** See text for definition of dynastic politician and strong/weak executive constraints. The dependent variable is the average growth rate in percent during a leader's spell in office. All OLS regressions are reported with robust standard-errors clustered at the country level. Standard errors are in parentheses: \* significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%. The full sample is a panel of 197 countries: 1848-2004.

**Table 4: Robustness**

	(1)	(2)	(3)	(4)	(5)	(6)
Father or Grandfather			1.71*** (0.58)	1.19** (0.55)	Matching estimators: Average treatment effects	
Father only	1.69*** (0.58)				Treatment	Political Dynasty
Any relative		1.32** (0.56)				Political Dynasty
Strong Executive Constraints	0.62 (0.47)	0.63 (0.47)	0.64 (0.46)	0.00 (0.45)	Number of matches	M(4)
Interaction	-1.31* (0.73)	-1.07 (0.71)	-1.41** (0.72)	-1.28** (0.72)	Weak Executive Constraints	1.47** (0.67)
Initial GDP per capita	-2.85*** (0.60)	-2.81*** (0.59)	-2.84*** (0.60)	-2.92** (0.51)	Observations	703
Tenure (years)			0.05** (0.02)			
Age (years)			-0.00 (0.01)		Strong Executive Constraints	0.22 (0.59)
Year dummy variables	Yes	Yes	Yes	Yes	Observations	637
Country dummy variables	Yes	Yes	Yes	Yes		
F test (p-value)	0.51 (0.47)	0.28 (0.60)	0.37 (0.54)	0.04 (0.8423)	Covariates	Leader, country and region
Observations	1637	1637	1634	1260		Leader, country, region and time
R-squared	0.3522	0.3515	0.3523	0.4312		

**Notes:** See text for alternative definitions of dynastic leader and strong/weak executive constraints. The dependent variable is the average growth rate in percent during a leader's spell in office. Column 1 to 4: All OLS regressions are reported with robust standard-errors clustered at the country level. Standard errors are in parentheses: \* significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%. The full sample is a panel of 197 countries: 1848-2004.

**Table 5: Post 1960 and Including Education as a Control**

	(1)	(2)	(3)	(4)	(5)	(6)
		Weak Executive Constraints	Strong Executive Constraints		Weak Executive Constraints	Strong Executive Constraints
Dynastic Leader	1.21** (0.48)	1.43** (0.65)	-0.47 (0.46)	1.17*** (0.48)	1.46** (0.66)	-0.51 (0.42)
Strong Executive Constraints Interaction	-0.17 (0.52)			-0.18 (0.52)		
	-1.35** (0.65)			-1.35** (0.64)		
Initial GDP per capita	-2.34 (1.01)	-2.71** (1.31)	-4.51*** (1.61)	-2.65*** (0.97)	-2.54* (1.51)	-4.715*** (1.65)
Average years of education(population over age 25)				0.25 (0.23)	-0.12 (0.29)	0.37* (0.20)
Year dummy variables	Yes	Yes	Yes	Yes	Yes	Yes
Country dummy variables	Yes		Yes	Yes	Yes	Yes
F test (p-value)	0.10 (0.7479)			0.19 (0.6649)		
Observations	753	408	345	753	408	345
R-squared	0.4250	0.4745	0.5298	0.4264	0.4748	0.5337

**Notes:** See text for definition of dynastic politician and strong/weak executive constraints. The dependent variable is the average growth rate in percent during a leader's spell in office. A leader is dynastic leader if a leader's father, grandfather or mother held an elected position. All OLS regressions are reported with robust standard-errors clustered at the country level. Standard errors are in parentheses: \* significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%. The full sample is a panel of 197 countries: 1848-2004.

**Table 6: Other Measures of Institutions**

	(1)	(2)	(3)	(4)	(5)	(6)
		Democracy (Polity2>5)	Non-Democracy		Democracy (Leader elected)	Non-Democracy
Dynastic Leader	1.05* (0.58)	0.42 (0.51)	0.61 (0.67)	0.81 (0.73)	0.31 (0.49)	-0.45 (1.13)
Democracy	0.73 (0.65)			1.06*** (0.39)		
Interaction	-0.50 (0.77)			-0.32 (0.82)		
Initial GDP per capita	-2.87*** (0.61)	-4.86*** (1.12)	-4.49*** (1.50)	-3.59*** (0.67)	-2.84*** (1.03)	-5.73*** (1.24)
Year dummy variables	Yes	Yes	Yes	Yes	Yes	Yes
Country dummy variables	Yes	Yes	Yes	Yes	Yes	Yes
F test (p-value)	0.93 (0.3377)			0.99 (0.3218)		
Observations	1756	933	823	1538	1067	471
R-squared	0.3035	0.4167	0.4313	0.3433	0.3652	0.6006

**Notes:** See text for definition of dynastic politician and strong/weak executive constraints. The dependent variable is the average growth rate in percent during a leader's spell in office. A leader is dynastic leader if a leader's father, grandfather or mother held an elected position. All OLS regressions are reported with robust standard-errors clustered at the country level. Standard errors are in parentheses: \* significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%. The full sample is a panel of 197 countries: 1848-2004.

**Table 7: Government Anti-Diversion Policy and Infrastructure Quality**

	(1)	(2)	(3)	(4)
Dynastic Leader	0.11** (0.05)	0.08** (0.03)	0.04** (0.01)	0.06 (0.04)
Strong Executive Constraints	0.04 (0.03)	0.16*** (0.03)	0.004 (0.01)	0.21*** (0.04)
Interaction	-0.13** (0.06)	-0.11** (0.05)	-0.04* (0.03)	-0.12** (0.06)
Year dummies	Yes	Yes	Yes	Yes
Country dummies	Yes		Yes	
Region Dummies		Yes		Yes
F test (p value)	0.29 (0.59)	0.69 (0.40)	0.02 (0.88)	1.49 (0.22)
Observations	355	355	274	274
R-squared	0.9335	0.5905	0.9536	0.5505

**Notes:** The dependent variable is the average growth rate in percent during a leader's spell in office. A leader is dynastic leader if a leader's father, grandfather or mother held an elected position. In columns 1 and 2, it is the average of the variables expropriation risk, corruption, rule of law, government repudiation and quality of bureaucracy, normalized between 0 and 1 originally constructed comes by Knack and Keefer (1995). It is available between 1982 and 1997. In columns 3 and 4 the dependent variable is "infrastructure quality" from BERI which is available 1972 to 1990. This variable assesses facilities for and ease communication between headquarters and the operation, and within the country, as well as quality of transportation. We take the value of this variable at the end of the leader spell, normalized to lie between 0 and 1. Estimation method is OLS with standard errors clustered at country level in parentheses: \* 10% significant, \*\* 5% significant, \*\*\* 1% significant.

**Table 8: The End of Dynasties**

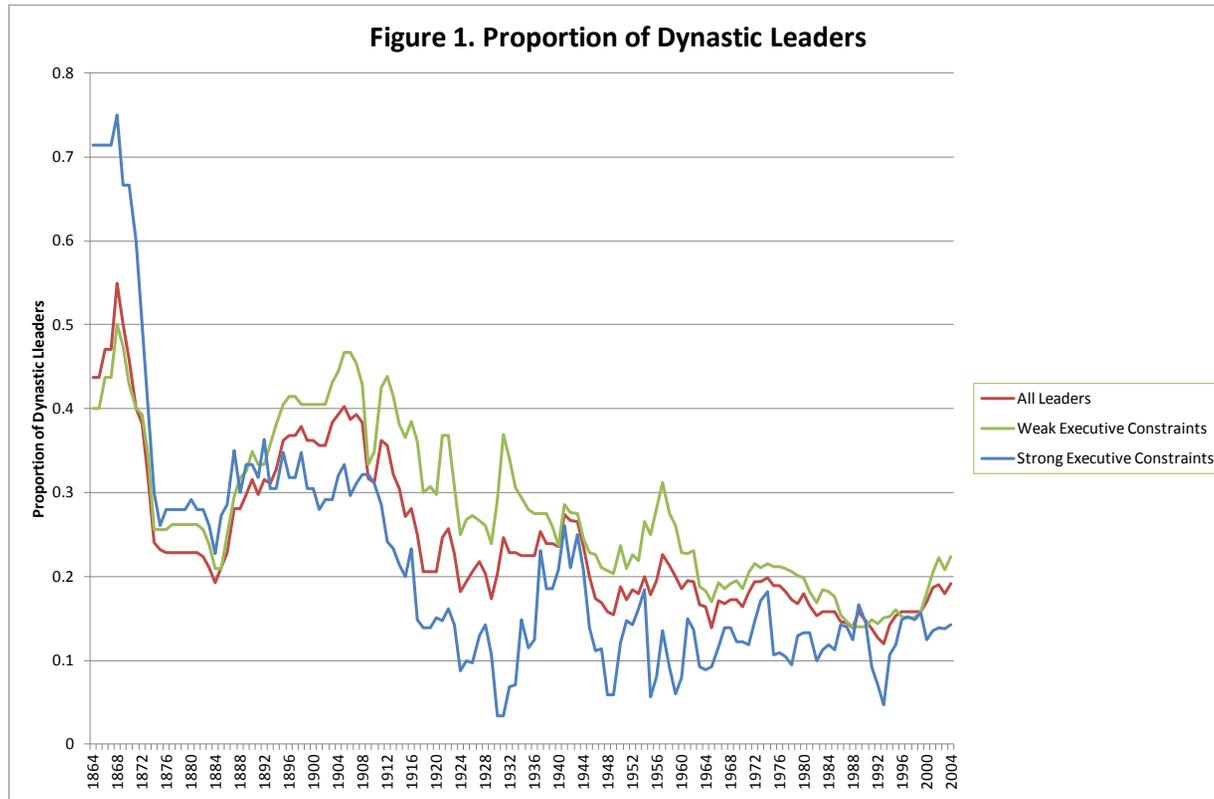
	End of dynastic leadership	End of dynastic leadership	End of dynastic leadership	End of dynastic leadership	End of non-dynastic leadership	End of Monarchy
	(1)	(2)	(3)	(4)	(5)	(6)
Average growth rate over the last five years	-10.43*** (3.67)	-13.95*** (5.22)	-11.77*** (4.16)	-12.89** (6.24)	2.39 (1.85)	-62.81* (34.2)
Strong executive constraints at t-1		-0.03 (0.43)		-1.12* (0.68)		
Interaction		14.94** (7.40)		12.98 (10.08)		
Natural disasters over the last 5 year	o		-0.28*** (0.09)	-0.19 (0.12)	0.01 (0.04)	-0.39 (0.58)
Interaction				-0.12 (0.16)		
Leader t-1 has a son			-0.46 (0.52)	-0.97* (0.88)	0.02 (0.06)	
Interaction				1.05 (0.76)		
Number of sons of monarch at t-1						-0.70*** (0.16)
F test (growth) (p-value)		0.03 (0.8554)		0.00 (0.9961)		
F test (sons) (p-value)				0.02 (0.8871)		
F-test (disasters) (p-value)				9.17 (0.0025)		
Observations	778	693	584	514	2414	67
Pseudo-R <sup>2</sup>	0.1669	0.1715	0.1944	0.2050	0.0856	0.4488

**Notes:** A leader is dynastic leader if a leader's father, grandfather or mother held an elected position. Standard errors clustered at country level in parentheses: \* 10% significant, \*\* 5% significant, \*\*\* 1% significant. All specifications include country and decade dummies.

**Table 9: IV Results**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Executive Constraints	Weak	Weak	Strong	Strong	Weak	Weak	Weak	Weak	Weak	Weak
	IV	First stage	IV	First stage	IV	First stage	IV	First stage	IV	First stage
Dynastic Leader	9.30* (4.81)		3.72 (4.72)		13.23** (6.38)		16.88* (9.8)		14.81* (8.97)	
Initial GDP per capita	-2.90*** (1.03)	0.019 (0.04)	-4.28*** (1.31)	-0.07 (0.05)	-3.09*** (1.06)	0.02 (0.04)	-4.58*** (1.65)	0.13** (0.06)	3.07*** (1.08)	0.01 (0.04)
Average number of Disasters leader spell									-0.24 (0.50)	0.026 (0.017)
Disasters t-1		0.04*** (0.01)		0.02 (0.013)		0.05*** (0.01)		0.03** (0.01)		0.04*** (0.01)
Disasters t-2		0.001 (0.01)		-0.02 (0.01)						
Disasters t-3		-0.01 (0.01)		0.02 (0.01)						
Disasters t-4		-0.005 (0.01)		-0.01 (0.01)						
Disasters t-5		0.02 (0.015)		0.01 (0.01)						
Average Growth previous leader						-0.07 (0.28)		-0.37 (0.38)		-0.05 (0.28)
Any son last dynastic leader								-0.01 (0.03)		
F statistic on instruments	2.44		1.65		2.39		1.82		2.39	
Observations	713	713	751	751	715	715	545	545	715	715
R-squared	0.3365	0.5235	0.4164	0.3379	0.1924	0.5169	0.5782	0.5450	0.1188	0.5191

**Notes:** See text for definition of dynastic politician and strong/weak executive constraints, disasters and any male son. The dependent variable is the average growth rate in percent during a leader's spell in office. A leader is dynastic leader if a leader's father, grandfather or mother held an elected position. All regressions are reported with robust standard-errors clustered at the country level. All specifications include year and country dummy variables. Standard errors are in parentheses: \* significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%. The full sample is a panel of 197 countries: 1848-2004.



**Notes:** A leader is dynastic leader if a leader's father, grandfather or mother held an elected position.