State Capacity and Growth Regimes

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ABSTRACT

Can high levels of state capacity protect countries from slow growth and deepening output collapses? Using data for 108 developing countries over 1971-2016, we classify five-year periods using a two-dimensional state space based on growth regimes and levels of state capacity. We model transitions between them using a finite state Markov chain, and then extend this to take political institutions into account. We find that high state capacity helps to sustain growth and limit output collapses, but these effects are sometimes less striking than the benefits of democracy.

JEL Classifications: E02, O40, O47.

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1 Introduction

Some observers believe that state capacity plays a fundamental role in shaping economic development. The state, to support sustained growth and avoid deep downturns, must enforce laws, manage public resources, and implement policies effectively. But despite the potential importance of state capacity, its influence on growth remains under-explored, in contrast to factors such as the protection of property rights and the extent of democracy, on which the literature is extensive.

This paper asks whether high levels of state capacity can protect countries from slow growth and deepening output collapses. The central idea is to model growth regimes, state capacity, and democracy jointly, and study how they evolve over time. This way of framing the problem has some advantages over conventional regressions, and allows us to derive some new stylized facts about state capacity and growth regimes. The method we adopt can be related to the research agenda set out by Kunal Sen, in which the central challenge is to understand the political origins of movements between phases of growth, stagnation, and collapse (Sen 2013).

The joint evolution of state capacity and growth regimes can be studied using a finite state Markov chain. This builds on our companion paper, Imam and Temple (2024a). There we classified five-year periods into growth, stagnation, or collapse, and then extended the state space to capture the prevailing political institutions (democracy versus autocracy). We found that, in democracies, spells of growth are longer-lived than in autocracies, output collapses less likely to deepen, and periods of stagnation less likely to presage outright collapse. Here we examine whether high state capacity has similar protective benefits, and then integrate the two analyses by studying state capacity, democracy, and growth simultaneously, using transitions among eight different states.

We fine that transitions between growth regimes are relatively common, while transitions between levels of state capacity, and between autocracy and democracy, are not. With this in mind, we mainly look at movements between growth, stagnation, and collapse, and contrast the associated transition probabilities between countries with different levels of state capacity. These results are typically based on large numbers of observations and should be reliable even though state capacity is persistent; despite the large number of parameters, our estimates of the transition probabilities are typically quite precise. In principle, we could have instead estimated separate transition matrices for countries with high and low state capacity respectively, but our integrated approach is more flexible and transparent in allowing the compositions of the two groups to evolve over time.

We find that, under high state capacity, growth is more likely to be sustained, stagnation less persistent, and output collapses less likely to deepen. This is what might have been expected, but the effects are sometimes modest, and even then may be overestimated. Since we model growth regimes and state capacity jointly, we should be wary of causal language. There are several potential sources of endogeneity, but some are less serious than others, because state capacity is more likely to be a function of the level of development (which we do not model) than of the current growth regime status. Even in a regime of fast growth, the underlying increase in output per head will be small relative to the cross-country variation that we see as determining state capacity. In the language of panel data, the between variation, which may be the main influence on state capacity, is much greater than the within variation.

Here, a more serious endogeneity problem is that state capacity will be correlated with other factors that influence growth or the risk of an output collapse. Besley and Persson (2011a,b) argue that political violence and low state capacity have common roots; peace and prosperity tend to go together with strong institutions. We then risk overestimating the role of state capacity. With this in mind, we extend the analysis to autocracy and democracy. The results suggest that democracy may be more important than state capacity in protecting against severe and deepening output collapses. Perhaps the ability to remove failing leaders is central to maintaining order and curtailing output collapses, but further work and alternative methods would be needed to investigate this more deeply.

In principle, the transition probabilities we estimate could be used to examine more subtle hypotheses, such as how state capacity and democratization are related: for example, are countries more likely to democratize if they have high state capacity? Findings here are limited by a small number of cases, and we give them much less emphasis. Especially in this respect, the approach will become more informative once longer spans of data become available.

The paper has the following structure. The next section discusses the literature. Section 3 describes the methods, and section 4 the data. Section 5 sets out results based on just two categories of state capacity, to illustrate the approach before we adopt more general versions. Section 6, the main set of results, considers the case of three categories for state capacity (low, medium, and high) and then investigates heterogeneity across countries and over time. Section 7 introduces democracy and autocracy, leading to a model with eight states, before section 8 concludes.

2 Related literature

In this section, we relate our work to the literature. We first sketch what we do and its main precursors. Then, after adopting a working definition of state capacity, we will consider its possible effects, across a range of outcomes.

2.1 Precursors

Our approach combines ideas from Quah (1993) and Pritchett (2003). In innovative work, Quah used Markov chains to study the transitions of countries between income classes. Pritchett (2003) emphasized the instability of growth and its lack of correspondence to any single model, and sketched an analysis in which countries move between different growth regimes. This 'episodic growth' perspective is attractive in treating convergence towards a frontier as just one regime among several, given that developing countries often experience extended phases of stagnation or crisis that do not resemble convergence towards a balanced growth path.

In Quah's first study in this area, his data ended in 1985; now that longer spans of data are available, we can bring the ideas of Quah and Pritchett together and study transitions between growth regimes, rather than income classes, using Markov chains. We take this further by differentiating between states according to measures of institutions; we then exploit the fact that a Markov chain with a multi-dimensional state space can be rewritten as a chain with a one-dimensional state space, simply by using composite states with expanded state definitions.

2.2 Defining state capacity

The roles of state capacity in development have long been of interest in history, political science, and historical sociology. Over the last twenty years, this interest has extended to economic historians and development economists, due to a more sophisticated understanding of institutions, better data, and perhaps the benefits of hindsight. In retrospect, some of the reforms in developing countries in the 1980s and 1990s may have given too much emphasis to limiting government discretion, and not enough to building capacity in the roles that the state retained (Fukuyama 2004).

The concept of state capacity is more specific and narrower in focus than some conceptions of institutions, and perhaps ultimately of more use to decision-makers. State capacity can be concisely defined as the ability of a government to achieve its goals; Skocpol (1985, p. 9) identified a need to "explore the 'capacities' of states to implement official goals, especially over the actual or potential opposition of powerful social groups or in the face of recalcitrant socioeconomic circumstance".[1] A more expansive definition would recognize that some goals are more desirable than others; it might require a state to achieve a Weberian monopoly of legitimate violence within its territory, develop the authority and capacity to make and enforce laws, maintain law and order, raise taxes, and provide public goods.[2]

Although various ways to conceive state capacity have been proposed, they share family resemblances. Mann (1986, p. 113) wrote of the 'infrastructural power' of the state, denoting the capacity of the state to penetrate civil society and to implement 'logistically political decisions throughout the realm.' Fukuyama (2011, 2014) separates the effectiveness of the state, the rule of law, and mechanisms for democratic accountability, which correspond in some countries to the executive, the judiciary, and the legislature respectively. Berwick and Christia (2018) define state capacity in terms of extraction, coordination, and compliance. Besley et al. (2022) survey work on the quality of the state bureaucracy, which tends to develop in parallel with state capacity more broadly (Besley and Persson 2009).

Given that any one definition can be contested it seems best, for present purposes,

[1] For related definitions see, for example, Acemoglu and Robinson (2019, p. 12), Dincecco (2017), and Dincecco and Wang (2024).

[2] This is based on Acemoglu et al. (2020), p. 749.

to adopt a working definition and see where it leads. Our empirical work will use one of the measures due to O'Reilly and Murphy (2022), which is the first principal component of four indicators: the rule of law, state authority over territory, rigorous and impartial public administration, and the relative weight of 'particularist' versus public goods in the government's budget for social and infrastructural spending.[3] Looking at the four indicators, it seems likely that high state capacity will promote growth and make collapses less likely. The absence of fiscal capacity from the list, due to data availability, will be discussed later.

2.3 The roles of state capacity

In this subsection, we will discuss the various roles of state capacity. The discussion will be wide-ranging, because we are interested in low state capacity as a risk factor for stagnation and collapse, as well as slow growth. High state capacity should help to ward off social and political instability, not least because 'stateness' is about the state's basic means of authority and social control.[4] It could help to stabilize political outcomes, enable smoother political transitions, lessen the risk of conflict, and protect countries against severe output collapses or extended stagnation.

State capacity has taken a circuitous path to its current prominence. For a long time, economists paid it little attention, even when exploring the roles of institutions in growth and development. As late as 2012, Savoia and Sen (2012) could refer to state capacity as a 'lesser-known' aspect of governance. But it has become clear that developing countries have often found it hard to mitigate market failures, secure property rights, enforce contracts, and ensure security. Even in rich countries, the capable modern state is a relatively recent phenomenon. Rose and Shin (2001, fn. 16) note that, in S. E. Finer's multi-volume history of government, the modern state does not enter until three-quarters of the way through. According to Oakeshott, quoted in Johnson and Koyama (2017), when the word 'state' came into use in the early modern period, it was 'a word for a new political experience'.

In the present day, the level of state capacity varies widely. A state with weak capacity may fail to provide high-quality public goods or guarantee peace. Since at least the end of the Cold War, there has been concern over fragile and failed states that are trapped in a dysfunctional equilibrium, in which low state capacity often plays a central role. According to North et al. (2009) and North et al. (2013), low-income countries are typically what they call 'limited access orders', in which coalitions of rent-seeking elites seek to limit violence but otherwise fail to support development. More broadly, policymakers and development practitioners would like to understand how countries can escape a vicious circle of low state capacity and slow growth.

Partly motivated by such questions, state capacity has come to the fore in research by economists and economic historians.[5] In the 1980s, writers on the history of East Asian

[3] Here, the measure of rigorous and impartial administration is based on whether public officials avoid cronyism, nepotism, and discrimination, so can be seen as measuring the absence of certain forms of corruption.

[4] See, for example, Andersen et al. (2014a), p. 1212.

[5] Their research is surveyed by Johnson and Koyama (2017) and Savoia and Sen (2015). For critiques and

growth began to highlight its role, as in the classic work of Johnson (1982) on the developmental state in Japan. The later literature on the protection of property rights and the importance of contracting institutions is partly about the state's capacity to make and enforce laws that support private sector economic activity (for example, Knack and Keefer 1995; Rodrik et al. 2004).[6] A broader conception of state capacity would take in the ability to achieve security and protect freedoms of various kinds.

One important role of state capacity is to limit conflict. In their book, Besley and Persson (2011b) develop several models of 'development clusters', having observed that 'income per capita, strong state institutions, and peaceful resolution of differences tend to go hand in hand' (p. 302). They treat investments in fiscal and legal capacity, and in violence or repression, as endogenous and dependent on underlying structural parameters, such as the cost of fighting and the advantage of the incumbent in the contest for power.

We can also relate state capacity to the broader literature on institutions and growth. In *Why Nations Fail*, Acemoglu and Robinson (2012, chapter 11) stressed the crucial nature of 'inclusive', mutually supportive economic and political institutions. They argued that inclusive institutions can be maintained or enhanced over time through a virtuous circle. Pluralism and the rule of law bring demands for further pluralism and political participation; they also support inclusive economic institutions, which in turn reinforce support for pluralism; and they contribute to openness and a role for the media, which can identify emerging threats to inclusive institutions.

In Acemoglu and Robinson (2012, p. 187) the two pillars that support inclusive political institutions are political centralization and pluralism. Political centralization is likely to be a key prerequisite for establishing state capacity (Acemoglu et al. 2020, fn. 1). Where political centralization is absent, it may be harder to enforce laws, maintain security, or manage the economy. As for pluralism, the role of civil society in helping to counter the power of the state may be vital. This theme has been developed further in Acemoglu and Robinson (2016, 2019, 2022a, 2022b). In a later book, Acemoglu and Robinson (2019) identify a 'narrow corridor', a development path where neither the state nor society dominates. While countries are moving within the corridor, state and society contest power in a way which spurs the development of both (see also Canen and Wantchekon, 2022). Other research by economists on state capacity and long-run development includes Acemoglu (2005), Besley et al. (2013), Besley and Persson (2008, 2009, 2010, 2011a, 2014), Besley et al. (2021) and Dincecco and Katz (2016).[7]

Acemoglu (2005), Acemoglu and Robinson (2019) and Ogilvie (2022) all point out that state capacity does not always promote growth: it may enable a state to dominate society through despotism, working against long-term prosperity. Davenport (2007) discusses how state actors can repress individual people, denying the right to free speech and due process of

wider views, see Bardhan (2016) and Ogilvie (2022). For a review from a political science perspective, see Berwick and Christia (2018).

[6] Ogilvie and Carus (2014) criticize this literature in the light of work in economic history.

[7] Many of these contributions are primarily theoretical, or draw on historical case studies; for a review of empirical papers, see section I of O'Reilly and Murphy (2022).

the law. He identifies an empirical 'law of coercive responsiveness' by which states typically react to challenges to the status quo with repressive actions. For Acemoglu and Robinson (2019) and Migdal (1988), a strong civil society is needed to counterbalance state power.[8] The philosopher Simone Weil, in her posthumously-published essay 'The Power of Words', wrote that 'The tension between pressure from below and resistance from above creates and maintains an unstable equilibrium, which defines at each moment the structure of society. This tension is a struggle but not a war...' (Weil, 1962 [2020]).

Some of these hypotheses are subtle and often best understood through historical case studies, as in Acemoglu and Robinson (2012, 2016, 2019). Empirical work can at least examine whether state capacity influences economic performance, which Ogilvie (2022) questioned. One component of state capacity is the effectiveness of a Weberian bureaucracy but, in studying its role in growth, Cornell et al. (2020) find that earlier work may have overstated the strength of the relationship.

In this paper, rather than study partial correlations between growth or its volatility on the one hand, and state capacity on the other, we look at transitions between growth regimes. This complements the studies of medium-run volatility by Acemoglu et al. (2003), Du (2010), Klomp and de Haan (2009), Malik and Temple (2009), and Millemaci et al. (2025) among others, here using a different empirical approach and emphasizing state capacity rather than other aspects of institutions.

Drawing on the above discussion, less capable states may be more likely to see social disorder and political instability, and less likely to avoid economic turmoil. If state capacity is low because political authority is not centralized, this in itself will bring challenges for macroeconomic management. Similarly, North et al. (2009) argue that macroeconomic instability will be high in limited access orders. If this is right, countries with relatively high state capacity will be more resilient and less vulnerable to severe and deepening output collapses or stagnation, the main hypotheses investigated here.

Finally, to avoid a potential misconception, note a sense in which our framework allows contingent historical events to have long-lived effects. Under the first-order Markov property, the next outcomes likely at any point vary with the most recent realization of the process. For example, we find that exiting a growth state is bad news: once in a stagnation or collapse regime, the transition probabilities imply that this can lead to many years of stagnation, deepening collapse, or cycles between stagnation and collapse. The scope for such outcomes reinforces the case for studying how economies move between regimes, rather than assuming that growth follows a single, stable autoregressive process that continues to hold irrespective of the current regime.

2.4 State capacity and democracy

The final empirical analysis in this paper will consider how growth, state capacity, and democracy interact. Part of the background is that countries in the first wave of democ-

[8]This is related to an emphasis on the political role of the middle class, a theme which dates back to Aristotle; for recent discussions, see Easterly (2001) and Wolf (2023, chapter 4).

racy, such as Britain and Sweden, had previously developed modern states, which then helped to support democratic institutions. For those cautious about the spread of democracy to present-day weak states, the phrase 'no state, no democracy' captures the view that democracy may be ineffective or fragile without high state capacity. Indeed, when liberal democracy is defined in full, recognizing civil liberties and the right to organize, it cannot be achieved without a capable state (for example, Rose and Shin, 2001, p. 334).

Some authors, notably Gjerløw et al. (2021), Knutsen (2013) and Mazzuca and Munck (2014, 2020), are more optimistic about the prospects for democracy even when state capacity is low. There are multiple paths to democracy, and its practical operations — not least electoral competition — may in themselves induce politicians to professionalize the bureaucracy and abandon clientelism (Mazzuca and Munck, 2014, p. 1236). An intermediate position can be found in the recent work of Slater and Wong (2022). They argue that successful democratizations in East Asia have often arisen as 'democracy through strength'. Elites are more willing to concede democracy when the state is strong and they have confidence in future stability and their own prospects for retaining some power. In terms of Acemoglu and Robinson's narrow corridor, the prospects for democracy may be best when the state and society are both strong, but not too much so.

Since around 2006, a 'democratic recession' has seen some countries regress to partial democracy or even autocracy; see Imam and Temple (2024a) for references. The recent extent of democratic backsliding suggests that the pessimists may have been right, and that democracy will be fragile unless preconditions are met. Our chosen form of analysis can cast only partial light on these questions, but will reveal some interesting patterns that could inform future research.

3 Methods

Our primary aim is to derive some new stylized facts using finite state Markov chains rather than correlations or regressions.[9] In line with most theoretical growth models, statistical studies in this area often impose a single growth regime, based on convergence to a balanced growth path modelled as a stable function of structural parameters. Typically an error term enters additively, so that randomness is often effectively an afterthought within a single regime, rather than central to movements between very different regimes.

Pritchett (2003) criticized this approach and suggested that, for empirical analysis, conventional growth theories may be less useful than approaches which model transitions between distinct regimes, such as expansion or collapse. Our work pursues this idea in a way that is easy to implement and flexible in how countries move between distinct states. The findings on output collapses can be seen as complementary to those of duration analysis, notably Hausmann et al. (2008); for more discussion see Imam and Temple (2024a).

Our work also draws on Quah (1993), who pioneered the use of Markov chains to

[9] The problems of growth regressions are well known, and discussed in Durlauf et al. (2005) and Temple (2021).

study mobility between categories for relative GDP per head. Here, as in Imam and Temple (2024a), we replace income categories with distinct growth regimes. This takes the analysis closer to that sketched by Pritchett (2003). We use five-year periods, classify them into periods of growth, stagnation, or collapse, and then study transitions between these growth regimes and levels of state capacity using finite state Markov chains. By treating the current state as observable, we can work with larger state spaces; see Imam and Temple (2024a).

Since the basics of Markov chains are well known, we describe them only briefly, following Stachurski (2009).[10] Consider a series $\{X_n, n \geq 0\}$ in discrete time, with a discrete state space $\mathcal{S}$ with states $1, .., S$. We consider a transition matrix $P = [p_{ij}]$ where $p_{ij} = Prob\{X_n = j | X_{n-1} = i\}$ for all $i, j \in \mathcal{S}$. The elements of this matrix are non-negative and each row sums to one; its individual elements are the probabilities of transitions between states. The maintained assumption in a first-order Markov chain, known as the Markov property, is that the transition probabilities depend only on the current state and, conditional on that state, not on the history of the process.[11]

As Azariadis and Stachurski (2005) noted, the literature after Quah has usually used a one-dimensional state space, even though the process generating the data will have more dimensions. They note that projecting a multi-dimensional process onto a single dimension will undermine the Markov property. Although data limitations preclude a full solution, our analysis helps to address some criticisms of earlier work.

Denote the marginal or unconditional distribution over the states at time t by a row vector ψ_t. Over time the evolution of the process can then be described by

$$\psi_{t+1} = \psi_t P$$

It can be shown (for example, Stachurski, 2009, theorem 4.3.5) that every Markov chain on a finite state space has at least one stationary distribution. Each stationary distribution will satisfy $\psi^* = \psi^* P$. When ψ^* is unique, this will be the long-run outcome.[12] Its individual elements indicate the proportions of time the process will spend in each state if the process runs for a long time. But depending on the elements of the matrix P, the process will converge slowly or quickly to the long-run equilibrium, and this outcome will be more or less sensitive to the individual elements of the transition matrix P.

3.1 Inference

For inference, we will report asymptotic standard errors for transition probabilities, based on Anderson and Goodman (1957). They derived the asymptotic variances of estimated transition probabilities p_{ij} for a Markov chain; for a transition from state i to j, they showed that

$$\sqrt{n_i}(\hat{p}_{ij} - p_{ij}) \longrightarrow N(0, p_{ij}(1 - p_{ij}))$$

[10] See also the textbook by Norris (1997).

[11] For discussion in a related context, see section 9.3 of Imam and Temple (2024a).

[12] On the computation of the long-run distribution, see for example Norris (1997), p. 40. For a general and robust solution procedure, see the software associated with Spedicato (2017).

where n_i is the number of observations of state i prior to the final period. In the growth literature, this result was previously used by Proudman et al. (1998) and noted in Kremer et al. (2001). Note that, for rare transitions, conventional statistical significance (that is, discernible difference from zero) is much less important for our purposes than whether the relevant probability is precisely estimated, which depends on how many times the relevant originating state is observed. Put differently, given that we are estimating the elements of a transition matrix, the width of the confidence intervals is what matters most, not whether those intervals contain zero.

3.2 Uniqueness and convergence

The long-run distribution is far more informative when it is unique. To establish uniqueness, we use the Dobrushin coefficient, $\alpha(p)$, introduced in Dobrushin (1956). We define this coefficient, and explain how to interpret it, in the appendix. All the long-run distributions we report later in the paper are unique.

The magnitude of the Dobrushin coefficient is related to the speed with which the process converges to its long-run distribution. An alternative measure of convergence speed, which we also report, is the asymptotic half-life; see Kremer et al. (2001), p. 290. This measure is defined as:

$$\gamma \equiv -\frac{\log(2)}{\log|\lambda_2|}$$

where λ_2 is the second largest eigenvalue (after 1) of the transition matrix. This gives the number of periods needed to halve the norm of the difference between the current distribution and the long-run distribution. We adjust it for the length of the time interval in our analysis (five years, as in Kremer et al. 2001).

4 Data

4.1 Country sample

Our sample will include most of the world's sizeable developing countries. The starting point is the intersection of the national accounts data underlying version 10.01 of the Penn World Table (PWT; Feenstra et al. 2015) and the O'Reilly and Murphy (2022) state capacity dataset, which yields 108 developing countries in a balanced panel, once we have excluded 24 rich countries that were OECD members by 1975.[13]

We exclude rich countries in order to isolate the transitions of developing countries, and to avoid conflating their outcomes with the experience of richer countries. For the issues we are interested in, the rich countries often behave similarly to one another and would not add much useful information, especially since state capacity is persistently high in many of them. Including the rich countries would make the results less relevant to the population of

[13]This means that we exclude New Zealand — which joined in 1973 — but not Mexico, the next joiner in 1994.

main interest here, the set of developing countries.

Our preference for a balanced panel means that we also have to exclude the successor states of the Soviet Union. The latter would be especially hard to include in a balanced panel: the lack of reliable subnational data for the Soviet Union rules out a continuous time series for each of the successor states. A small number of countries from the former Soviet bloc, such as Poland and Romania, do have a continuous time series in the national accounts underlying the PWT, and are included.

In our main analysis, our five-year periods begin in 1971, ending with the 2011-2016 period (we cannot analyze 2016-2021 because PWT version 10.01 ends in 2019). This follows Imam and Temple (2024a), and our other data choices also follow that paper closely. Given our data sources, it might seem more natural to begin in 1970 than in 1971. Starting in 1971 means that our 1971-1976 period contains the first oil shock and its aftermath, 1981-1986 contains the debt crisis that began with Mexico's 1982 default, 1996-2001 contains the East Asian financial crisis of 1997-1998, and 2006-2011 contains the global financial crisis of 2007-2009 and subsequent recession. By 'contains', we mean that the first year of weak growth will be early in the five-year period rather than just before it or towards the end. When starting earlier or later, the periods would align less well with these major events; in the worst case a collapse in output will straddle the boundary year between two periods and remain undetected. In practice, however, Imam and Temple (2024a) found that long-run distributions were little altered by alternative start dates, indicating robustness in this dimension.

4.2 State capacity

The state space in this paper will distinguish between growth regimes and state capacity levels. Measuring state capacity is not straightforward, with some of the recent work using relatively simple empirical models to generate stylized facts. Our work takes advantage of the long-term measures of state capacity introduced by O'Reilly and Murphy (2022). They construct three different measures based on indicators taken from the V-Dem dataset.[14]

We use the measure which is the first principal component of four indicators: the rule of law, state authority over territory, rigorous and impartial public administration, and the relative weight on 'particularist' versus public goods in the national budget for social spending and infrastructure. This procedure recognizes that state capacity is multidimensional, but there may be useful information in the variation common to a set of indicators. In the terminology of North et al. (2009), we might think of the four indicators as capturing differences in maturity among limited access orders.

In Figure 1 we present Tukey box-plots of state capacity at fifteen-year intervals between 1971 and 2016. The median (represented by the horizontal line within each enclosed box)

[14] For more details on the V-Dem dataset, see the V-Dem website and codebook, Coppedge et al. (2023). The state capacity data we use are from the 2022 release of the O'Reilly and Murphy (2022) measures, using version 12 of the V-Dem data, with factor loadings updated based on that version of the V-Dem data.

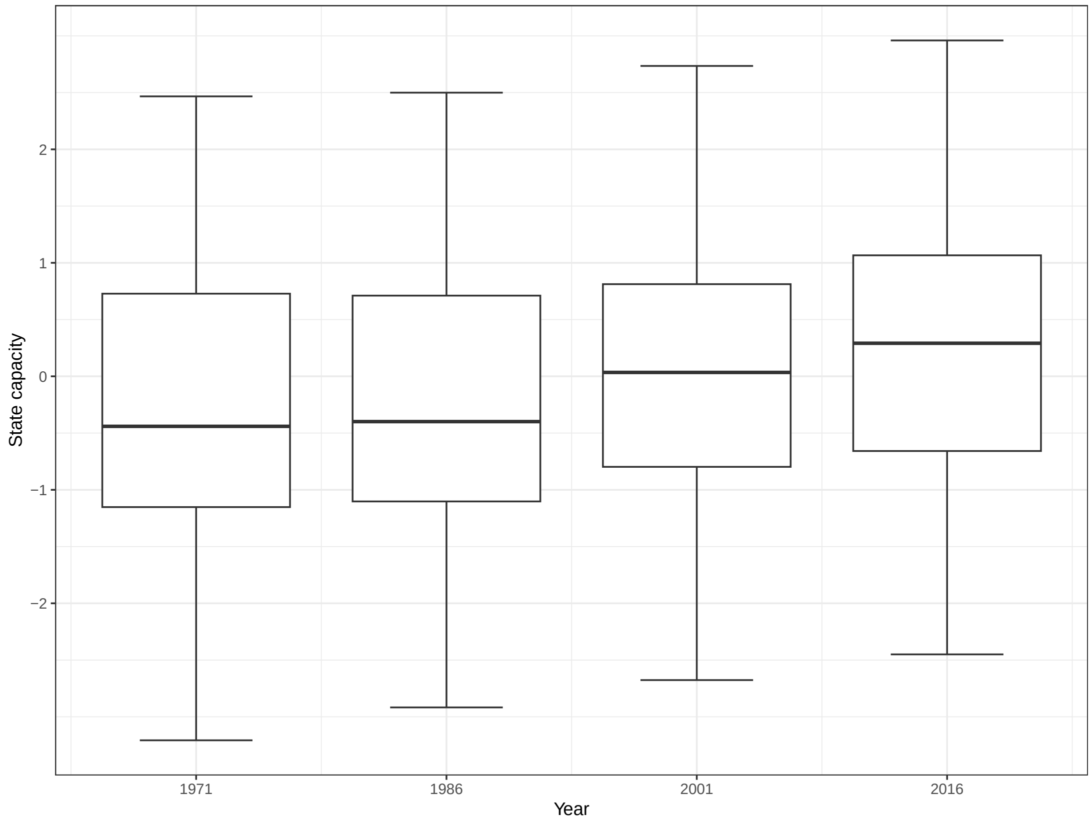

Figure 1: Tukey box-plots for state capacity, 1971-2016

shows little improvement by 1986, but improves noticeably between 1986 and 2001, and to a lesser extent between 2001 and 2016. The period 1986-2001 aside, the improvement is not large relative to the interquartile range (the height of each enclosed box) and the extent of dispersion is broadly stable.

O'Reilly and Murphy present two other measures, using more indicators and including fiscal capacity, but these are available for a smaller number of countries and hence we do not use them here. This is a significant limitation given the emphasis on fiscal capacity in Besley and Persson (2011b). That said, the correlations between the various candidate indicators are likely to be high enough that our state classifications, using broad categories of state capacity, would not be greatly affected by alternative choices. In Table 2 of O'Reilly and Murphy (2022), it can be seen that the first principal component gives roughly similar relative weights to the candidate indicators whether or not fiscal capacity is included.

4.3 Growth regimes

We measure output by GDP at constant national 2017 prices, from the national accounts data used to construct version 10.01 of the PWT. We use the national accounts series because we are interested in growth over time rather than cross-national comparisons of productivity levels at a point in time; see Nuxoll (1994). The use of national prices corresponds to the usual methods for dating recessions, which do not need to use information on international price differences, given their focus on domestic growth rather than levels comparisons. Combining the GDP and state capacity data, our balanced panel has 108 developing countries with nine state observations for each country, which implies that we have data on $108 \times (9 - 1) = 864$ transitions. This will be the case for all three analyses presented in the paper.

Output collapses could be defined in terms of total output, or a measure closer to productivity. The distinction matters most when a country experiences a rapid change in population, as when conflict leads to emigration; the Rwandan genocide in 1994 is one important case. We use a measure closer to average living standards and productivity, and work with output per head, using the PWT 10.01 data on population.

As in Imam and Temple (2024a), we define an output collapse as a major decline in output per head that is sustained over time. Within each five-year period, we look at whether output per head declines by 5% or more over five years, over either of the two subperiods of four consecutive years, or over any of the three subperiods of three consecutive years. Looking for at least a 5% decline means that we do not classify milder recessions, which are part of the business cycle, as output collapses. Measuring output changes over at least three years means that we do not pick up V-shaped recessions, such as those associated with the Covid-19 pandemic (and note that our sample ends before the pandemic, given the availability of data). Given this, the way we define an output collapse tallies with the common-sense idea that such events involve output losses that are substantial and protracted. The use of several different qualifying criteria reflects the fact that output collapses can play out in a variety of ways. For more discussion, and details on our timing assumptions, see Imam and Temple (2024a).

If a five-year period is not classified as one of collapse, we can assign it to either a growth regime or stagnation. To classify countries as in a growth regime, we again follow Imam and Temple (2024a). We look at whether a country's growth rate is similar to that of countries at the frontier, taking into account that frontier growth rates vary over time (see, for example, Kremer et al. 2022). We define the relevant threshold as

$$G(t) \geq \max(0.50, G_R(t) - 0.75)$$

where $G_R(t)$ is the average rich country (OECD) growth rate at time t. This imposes two requirements. First, we require that annual growth is at least equal to the average OECD growth rate in that five-year period, minus 0.75 percentage points (we explain this adjustment shortly). Second, annual growth should also be at least 0.50 percentage points. Given that average OECD growth is occasionally low or even negative, as in the 2006-2011 period, it seems sensible to require at least modestly positive growth to qualify for the growth regime.

We can think of countries that qualify as following the regime of a neoclassical growth model, and growing either at the rate of the frontier, or faster through increasing capital intensity and technological catch-up. In defining frontier growth, we allow a shortfall of up to 0.75 of a percentage point; this is because some OECD member countries, used to compute the OECD average, will also be converging to balanced growth paths from below, rather than growing at the slower rate of frontier countries. Those countries which do not meet our two requirements, but are not collapsing, are classified as stagnating. Hence, the stagnation state is effectively a residual category for countries which are neither collapsing, nor growing at a rate that is at least modestly positive and comparable to the frontier. In some of the analyses that follow, we elide the growth and stagnation states, so that countries are either collapsing or not.

The O'Reilly and Murphy measures of state capacity, including the one we are using, are annual. We take the average over five years to arrive at a value for state capacity for each five-year period. When we classify states, we either work with two levels of state capacity (high/low) or three (high/medium/low), splitting at certain percentiles. This helps in keeping the number of states manageable, not least when reporting results.[15]

5 Results

First, we work with three growth regimes (growth, stagnation, collapse) and two levels of state capacity (high, low). This implies $3 \times 2 = 6$ states in total. The growth regimes are classified as previously discussed. FOr the threshold for high state capacity, we choose the 66th percentile of the empirical distribution in the first period, 1971-1976. We work with the 66th percentile rather than, say, the median, because of a perception that state capacity in many developing countries has been low. All computations are carried out in R, using both our own code and the packages of Soetaert and co-authors (2020) and Spedicato and co-authors (2017).

In Figure 2, we show transitions between the six states. For clarity in presentation, all our figures will omit low probability transitions (those with probabilities less than 0.04), round the remaining probabilities to two decimal places, and adjust the diagonal entries of the transition matrix so that the rows still sum to one; this means that the numbers shown in this and later figures are only approximate. The original, unadjusted estimates can be found in the later tables.

It is clear that, under high state capacity, growth is only slightly more persistent, but collapses are less likely to deepen. The stagnation regime is slightly less persistent, and less likely to presage outright collapse. We can also see that, where countries with high state capacity are in stagnation or collapse states, there are small probabilities (less than 0.10) of moving into a collapse with low state capacity. One drawback of using binary categories for state capacity is that some of these reversals may reflect small movements across our low/high threshold from countries near the threshold; in the next section, we will use three categories for state capacity.

[15] Some related work, such as Barseghyan and DiCecio (2011), Fiaschi and Johnson (2025), Gleditsch and Ward (1997), Johnson (2005) and Quah (1997), uses stochastic kernels. That has some advantages over working with discrete categories, but the results are typically harder to communicate and interpret.

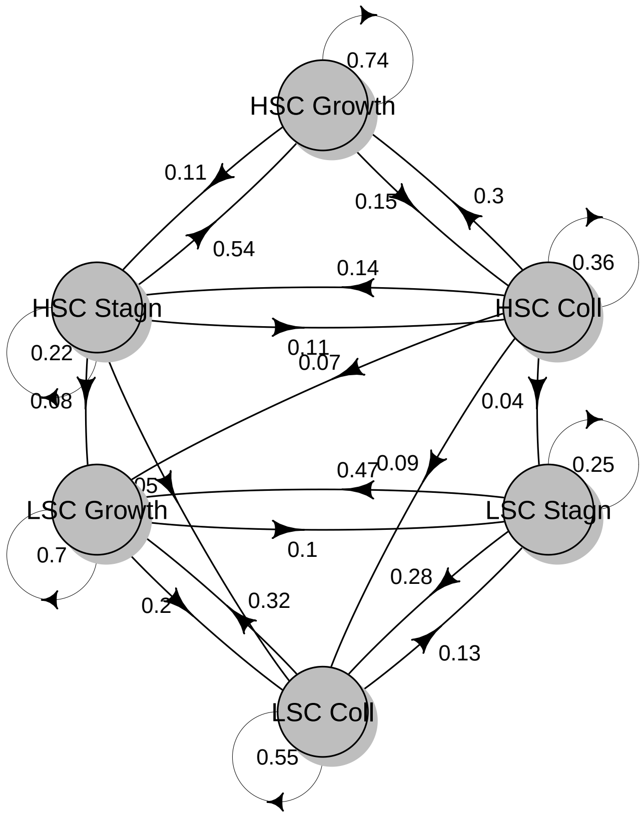

Figure 2: Transitions, high/low state capacity

Since the graph omits some transitions, we should look at the transition matrix in more detail, reported in Table 1. The entry in a row and column indicates the probability of moving from the row state to the column state. The individual probabilities are derived by asking what proportion of countries in state x at time t are found in state y at time $t+1$. These are the maximum likelihood estimates, as used in Quah (1993) and Kremer et al. (2001), among others.[16] To convey the structure of the matrix at a glance, probabilities of 0.10 or greater are shown in bold. The Anderson-Goodman asymptotic standard errors for the transition probabilities are shown in parentheses. Given the earlier literature, and its demonstration that small changes in the transition probabilities can matter for long-run predictions, we think it is good practice to report the absolute numbers of transitions (the transition counts) as well.

[16] For the derivation of the maximum likelihood estimator, which is consistent, see for example Norris (1997), p. 56.

Table 1: State capacity and growth regimes

Transition matrix	HG	HS	HC	LG	LS	LC
HG	**0.726**	**0.113**	**0.153**	0.008		
	(0.040)	(0.028)	(0.032)	(0.008)		
HS	**0.543**	**0.200**	**0.114**	0.086		0.057
	(0.084)	(0.068)	(0.054)	(0.047)		(0.039)
HC	**0.310**	**0.143**	**0.333**	0.071	0.048	0.095
	(0.071)	(0.054)	(0.073)	(0.040)	(0.033)	(0.045)
LG	0.030	0.006	0.003	**0.649**	**0.105**	**0.207**
	(0.009)	(0.004)	(0.003)	(0.026)	(0.017)	(0.022)
LS	0.010	0.010		**0.471**	**0.221**	**0.288**
	(0.010)	(0.010)		(0.049)	(0.041)	(0.044)
LC	0.018	0.009	0.018	**0.323**	**0.137**	**0.496**
	(0.009)	(0.006)	(0.009)	(0.031)	(0.023)	(0.033)
Dobrushin	$\alpha(p) = 0.03$		$h = 31.17$			
Last ψ_T	0.241	0.028	0.046	0.519	0.037	0.130
Future ψ_{T+25}	0.223	0.049	0.066	0.354	0.090	0.216
Future ψ_{T+100}	0.234	0.051	0.070	0.345	0.088	0.212
long-run ψ^*	0.236	0.052	0.070	0.343	0.088	0.210
(s.e.)	(0.061)	(0.015)	(0.018)	(0.047)	(0.016)	(0.032)
Transition counts						
HG	90	14	19	1		
HS	19	7	4	3		2
HC	13	6	14	3	2	4
LG	10	2	1	216	35	69
LS	1	1		49	23	30
LC	4	2	4	73	31	112
$NT = 864$	$N = 108$	$T = 8$				

Transitions from row state to column state. In the state labels, H/L refer to high/low state capacity, G/S/C refer to growth/stagnation/collapse. Blank entries are zeroes; bold entries are transition probabilities of 0.10 or above. Bootstrapped standard errors reported for long-run distribution. For more details see the text.

Table 2: Mean passage times, six states

MPT/MFR	HG	HS	HC	LG	LS	LC
HG		89.10	54.50	90.30	135.70	99.40
HS	42.80		75.20	79.10	126.20	88.50
HC	65.80	115.90		70.60	113.70	78.30
LG	151.90	208.30	179.70		66.30	33.60
LS	155.40	210.50	182.60	16.40		29.10
LC	152.50	207.70	177.80	21.40	63.30	
MFR	21.10	96.40	71.10	14.60	57.00	23.80

Mean passage times from row state to column state. In the state labels, H/L refer to high/low state capacity, G/S/C refer to growth/stagnation/collapse. MFR is the mean first recurrence time. For more details see the text.

Note that estimating transition probabilities avoids one problem for analysts, namely the right-censoring that arises when some output collapses are ongoing at the end of the sample; see Hausmann et al. (2008) for discussion. A remaining problem, shared with much of the growth literature, is that countries where stagnation or collapse are persistent are especially likely to be missing from the data. We may then underestimate the persistence of stagnation and collapse for the set of developing countries as a whole.

From the transition counts in Table 1, we can calculate that there are 25 transitions in all from low state capacity to high state capacity states, and 15 transitions the other way, so neither capacity level is an absorbing state. The number of transitions between more specific states is low in some cases, and the transition matrix is approximately block diagonal. Although the off-diagonal transition probabilities are high enough that convergence is not slow, some are based on a small number of cases.

That said, as in Imam and Temple (2024a), we should dispel some potential misconceptions about transition counts, and low counts in particular. These are not always a problem. If a state x is observed many times in the data, but is followed by state y only a handful of times, this should be reliable evidence that the probability of moving from state x to state y is low. A more serious problem arises when a state is observed only rarely in the data. In that case, both the numerator and denominator of a transition probability may be small numbers, and the results could be sensitive to just a few cases. But some results will be robust even then, because a state which is rarely observed will have little influence on the long-run properties of the process, such as the long-run distribution or the asymptotic rate of convergence. Hence, low transition counts do not rule out useful results, as long as the originating states are observed many times in the data.

In Table 1, we can see that, when state capacity is high, growth is slightly more persistent, stagnation slightly less persistent, and output collapses less likely to deepen. These effects, however, are quite modest, especially when contrasted with the findings on democratic institutions in Imam and Temple (2024a), which were more clear-cut. Although output collapses under high capacity may seem unlikely to deepen, this is partly because there are some transitions from that state to stagnation or collapse under low state capacity. A more sizeable effect is that, for countries with high state capacity, the transition from stagnation to outright collapse has probability 0.114 over five years, while the equivalent transition under low state capacity is more than twice as likely, with a probability of 0.288. Although this difference in probabilities may seem small in absolute terms, the typical output collapse is so costly that the difference should be seen as economically significant.

Table 1 also reports the long-run distribution along with bootstrapped standard errors. The long-run distribution is quite precisely estimated and implies that, in the long run, countries will spend around a third $(0.236 + 0.052 + 0.070 = 0.358)$ of the time with high state capacity, around a third of the time growing with low state capacity, and a fifth of the time in an output collapse with low state capacity. Convergence is fast enough that, twenty-five years after the final period, the distribution already closely resembles the long-run distribution. As in Quah (1993, fn. 4), we should not see this as a serious long-run forecast, given all the considerations not modelled, but as a way to reveal tendencies hidden in the data.

Table 2 shows the mean first passage times and the mean first recurrence (MFR) times. In reading the former, the initial state sets the row, and the destination state the column. The entry in a row and column indicates the mean number of years that will elapse in moving from the row state to first reaching the column state. These passage times take into account the many possible routes through the states over time.[17]

6 Three capacity levels

In this section we present the main analysis, which reduces the growth regimes to two (growth/collapse) and uses three levels of state capacity (low, medium, and high). This again implies $2 \times 3 = 6$ states in total. The thresholds for medium and high state capacity are based on the 33rd and 66th percentiles, respectively, of the empirical distribution in the first five-year period, 1971-1976. We could think of the countries in the lowest third of state capacity as overlapping substantially with the set of fragile or failing states.

The transitions are shown in Figure 3, with low probability transitions omitted as before. The (more accurate) transition matrix is shown in Table 3 and the mean first passage times in Table 4. We can see that growth is most likely to be sustained under high levels of state capacity, less likely under medium levels, and least under low levels. Similarly, output collapses are least likely to deepen under high state capacity, more so under medium levels, and most under low levels. Some of these differences are relatively modest, however. Given the contrast with the starker findings in Imam and Temple (2024a), this perhaps suggests

[17] The calculations are matrix-based as in Grinstead and Snell (2006), and have been checked against the `markovchain` package of Spedicato and co-authors (2017).

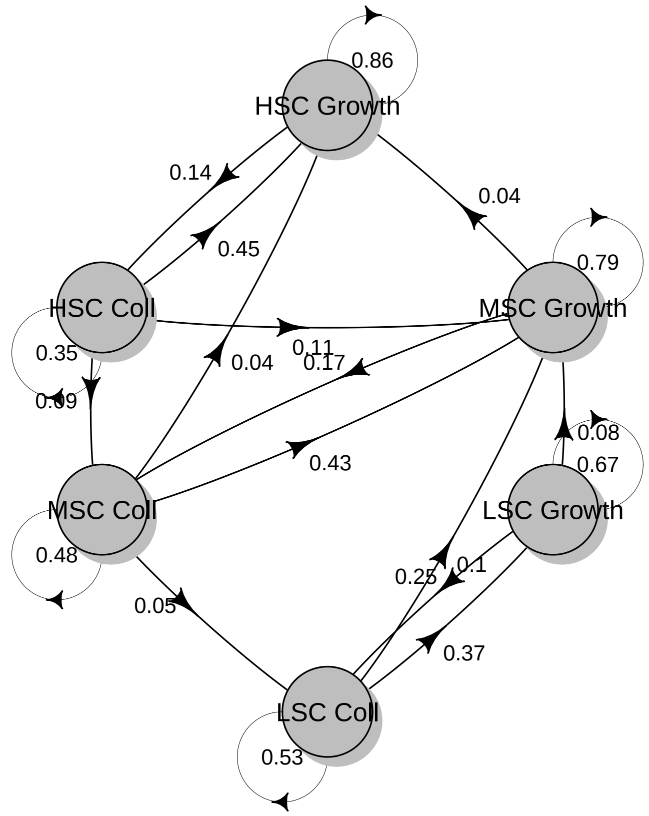

Figure 3: Transitions, high/medium/low state capacity

that state capacity has less of a role to play than democracy in protecting against deepening output collapses. We return to this question later.

In terms of state capacity transitions, there are 23 instances where medium levels of state capacity increase to high, and 15 transitions in the other direction. There are 35 transitions from low state capacity to medium, and 17 in the other direction. It is clear that low, medium, and even high state capacity are not absorbing states, so long-run diversity is inevitable. The transitions between the levels of state capacity are sufficient to generate some mobility among the six states, and to ensure that the process converges to the long-run distribution in a matter of decades. Convergence is rather faster than in Quah (1993), Kremer et al. (2001) and Imam and Temple (2025b): their states were defined over relative income classes rather than growth regimes, with relatively few transitions between income classes, leading to sparse transition matrices.

The Dobrushin coefficient is greater than zero, so the long-run distribution is again

Table 3: Three levels of state capacity

Transition matrix	HG	HC	MG	MC	LG	LC
HG	**0.818**	**0.145**	0.025	0.013		
	(0.031)	(0.028)	(0.012)	(0.009)		
HC	**0.452**	**0.333**	**0.119**	0.095		
	(0.077)	(0.073)	(0.050)	(0.045)		
MG	0.049	0.004	**0.741**	**0.173**	0.023	0.011
	(0.013)	(0.004)	(0.027)	(0.023)	(0.009)	(0.006)
MC	0.048	0.024	**0.432**	**0.432**	0.008	0.056
	(0.019)	(0.014)	(0.044)	(0.044)	(0.008)	(0.021)
LG	0.006		0.082	0.035	**0.620**	**0.257**
	(0.006)		(0.021)	(0.014)	(0.037)	(0.033)
LC		0.010	0.109	0.040	**0.376**	**0.465**
		(0.010)	(0.031)	(0.019)	(0.048)	(0.050)
Dobrushin coefficient	$\alpha(p) = 0.04$		$h = 32.05$			
Last ψ_T	0.269	0.046	0.417	0.046	0.139	0.083
Future ψ_{T+25}	0.276	0.067	0.344	0.133	0.105	0.075
Future ψ_{T+100}	0.307	0.074	0.338	0.132	0.086	0.063
long-run ψ^*	0.315	0.076	0.335	0.131	0.083	0.061
(s.e.)	(0.074)	(0.020)	(0.053)	(0.023)	(0.027)	(0.019)
Transition counts						
HG	130	23	4	2		
HC	19	14	5	4		
MG	13	1	197	46	6	3
MC	6	3	54	54	1	7
LG	1		14	6	106	44
LC		1	11	4	38	47
$NT = 864$	$N = 108$	$T = 8$				

Transitions from row state to column state. In the state labels, H/M/L refer to high/medium/low state capacity, G/C refer to growth/collapse. Blank entries are zeroes; bold entries are transition probabilities of 0.10 or above. For more details see the text.

Table 4: Mean passage times, six states

MPT/MFR	HG	HS	MG	MC	LG	LC
HG		60.10	81.60	102.30	335.50	327.20
HC	44.80		66.20	85.80	319.70	311.30
MG	116.40	158.80		49.60	264.90	259.30
MC	115.80	155.70	23.70		260.90	248.20
LG	148.30	188.50	47.60	75.70		97.00
LC	146.80	185.90	45.90	74.30	88.60	
MFR	15.90	65.90	14.90	38.20	60.60	82.60

Mean passage times from row state to column state. In the state labels, H/M/L refer to high/medium/low state capacity, G/C refer to growth/collapse. MFR is the mean first recurrence time. For more details see the text.

unique. In terms of the speed of convergence, the asymptotic half-life (h) is 32 years. Consistent with this, the distribution after another 25 years, reported in the table, is quite close to the long-run distribution. The long-run distribution implies that countries will spend about half their time with medium levels of state capacity, slightly more than a third with high state capacity, and less than a fifth with low state capacity. This is not dissimilar to the outcome in the final five-year period, 2011-2016, of the time span considered, and consistent with the slow improvement seen earlier in Figure 1.

6.1 Heterogeneity

We now ask: how much do the transition probabilities vary across country groupings, and over time? It seems natural to expect some heterogeneity, and we can test for this formally, as set out in Bickenbach and Bode (2003). Investigating heterogeneity allows us to present some additional stylized facts, while also acting to qualify our earlier findings.

Since using subsamples generates too many transition matrices to report, we instead summarize outcomes using the long-run distributions. The results are shown in Table 5, with the first case dividing the sample between sub-Saharan Africa and the rest of the developing world. The striking difference here is that non-SSA countries are twice as likely to be in a growth regime with high state capacity (HG), and spend less time in output collapses (based on the aggregate of HC, MC, LC). That said, given the small size of the samples, the long-run distributions are imprecisely estimated. A Pearson test of the null of homogeneity has a p-value of 0.182, so does not reject homogeneity at conventional levels.

We then subdivide the sample into low income and above low income, using Penn World Table version 10.01 and an income threshold for 1971 GDP per head equal to 2000 international dollars.[18] This time the differences in long-run distributions are a little less

[18]This is based on CGDPe, expenditure-side real GDP at current PPPs, used to compare relative living

marked, and the p-value from a Pearson test is 0.261.

Finally, and perhaps most strikingly, we divide the time period, with the results shown in the final panel of Table 5. Growth with high state capacity became far more likely in the second period, and output collapses less likely. A Pearson test has a p-value below 0.01, so time homogeneity is firmly rejected. The change between the two periods seems likely to reflect both increased state capacity (as seen earlier in Figure 1) and a declining incidence of major crises; on this latter development, and its role in changing patterns of convergence, see Imam and Temple (2025b).[19]

Table 5: Long-run distributions for subsamples

	HG	HC	MG	MC	LG	LC
SSA and non-SSA						
SSA	0.209	0.062	0.325	0.187	0.105	0.112
(s.e.)	(0.115)	(0.041)	(0.128)	(0.075)	(0.057)	(0.059)
Non-SSA	0.420	0.089	0.300	0.090	0.065	0.035
(s.e.)	(0.170)	(0.039)	(0.119)	(0.037)	(0.036)	(0.019)
Income split						
Low income	0.318	0.030	0.377	0.081	0.120	0.074
(s.e.)	(0.242)	(0.092)	(0.183)	(0.080)	(0.069)	(0.042)
Above low	0.335	0.100	0.305	0.152	0.060	0.049
(s.e.)	(0.134)	(0.042)	(0.113)	(0.058)	(0.031)	(0.025)
Subperiods						
1971-1991	0.190	0.079	0.316	0.217	0.094	0.105
(s.e.)	(0.101)	(0.042)	(0.122)	(0.085)	(0.050)	(0.056)
1991-2016	0.533	0.081	0.252	0.055	0.057	0.021
(s.e.)	(0.215)	(0.051)	(0.132)	(0.037)	(0.044)	(0.015)

This table shows long-run distributions for subsamples, based on three levels of state capacity (H/M/L) and either growth or collapse (G/C).

7 Introducing democracy

In this section, we enlarge the state space, to model growth regimes and state capacity jointly with political institutions. For Huntington (1968), political order was the priority, so

standards across countries at a single point in time; see the online PWT documentation for details.

[19]We also investigated heterogeneity across resource exporters and non-resource exporters, but there are too few instances of high state capacity in the former group for this to work well.

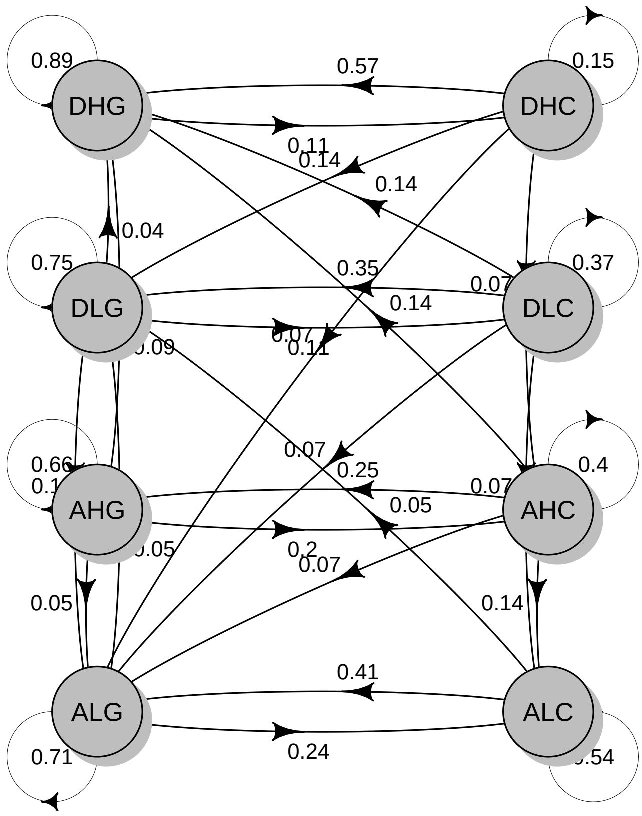

Figure 4: Introducing democracy

that democracy might be less central than state capacity. But perhaps what Mazzuca and Munck (2020) call 'high-capacity democracies' are the countries best placed to succeed and to avoid major crises. As noted earlier, Imam and Temple (2024a) found that, in autocracies, growth is less likely to be sustained than under democracy, output collapses are much less likely to deepen, and stagnation is more likely to presage outright collapse.

To keep the number of states manageable, we again reduce the growth regimes to growth/collapse, work with two levels of state capacity (high/low) and introduce political institutions (autocracy/democracy). This implies that we have $2 \times 2 \times 2 = 8$ states. This helps to address a point stressed by North et al. (2009), namely that formally similar democratic institutions will work differently depending on the context, such as (in our case) high or low state capacity.

To classify political institutions as democratic or autocratic, we use the V-Dem dataset, version 13, and in particular its *Regimes of the World* variable (v2x_regime). This variable is ordinal, taking the value zero for a closed autocracy, 1 for an electoral autocracy, 2 for an electoral democracy and 3 for a liberal democracy. As in Imam and Temple (2024a), we look at whether the minimum value over the five-year period is at least two. This means that our democratic regimes have been democratic for the full five years; if they have been democratic only briefly within the period, that period will be classed as autocratic. The motivation here is that, for a period to be classified as democratic, that should be a stable characteristic, reflecting at least some degree of democratic consolidation. Although this may sound too strict, Imam and Temple (2024a) found that using a less demanding criterion did not greatly change the results.

Now that we have eight states, Figure 4 shows the transitions as a graph, again omitting low probability transitions for clarity. Perhaps the main point to note emerges from looking down the right-hand side of the figure, contrasting the four collapse states. Output collapses are least likely to deepen in high-capacity democracies, more likely under democracy and low state capacity, even more under autocracy and high state capacity, and most likely of all under autocracy and low state capacity. This protective effect of democracy is consistent with Imam and Temple (2024a), but also suggests that within the set of democracies, high state capacity seems to offer further protection.

The transition matrix for this eight-state case is shown in Table 6, the transition counts in Table 7 and the mean first passage times in Table 8. Growth is most likely to be sustained under democracy and high state capacity — with probability 0.857 over five years — and less likely under democracy and low state capacity. Output collapses are rare under democracy and high state capacity. At first glance, one somewhat anomalous result is that growth is slightly more likely (0.671) to be sustained under autocracy and low state capacity than under autocracy and high state capacity (0.611). This looks less anomalous if we consider that the state of autocracy/high state capacity/growth sometimes leads (with transition probability 0.093) to democracy and high state capacity, or (with the same probability, $0.056 + 0.037 = 0.093$) to low state capacity.

In this respect and others, we should repeat our notes of caution: if we look at the transition counts in Table 7, there are relatively few in the second and fourth rows (DHC and DLC). This reflects the rarity of output collapses under democracy, which is informative in itself. It supports the idea that democracy protects against collapse, but also means that transition probabilities out of these states are imprecisely estimated. That said, states which occur in the data only rarely will not have much influence on the long-term properties of the process. The stationary distribution should remain a useful way to summarize long-run tendencies.

Once again the transition matrix is approximately block diagonal, reflecting the persistence of political institutions and state capacity. Nevertheless, some of the individual transition probabilities are of interest. For democracies with high state capacity, the probability of moving from collapse to growth is high, at 0.571 over five years. As for autocracies, some of those with high state capacity and in an output collapse make a transition to democracy: this happens with probability $0.143 + 0.036 = 0.179$ over five years. The small

Table 6: State capacity and growth regimes

TM	DHG	DHC	DLG	DLC	AHG	AHC	ALG	ALC
DHG	**0.857**	**0.114**			0.019		0.010	
	(0.034)	(0.031)			(0.013)		(0.009)	
DHC	**0.571**	**0.143**	**0.143**			0.071	0.071	
	(0.132)	(0.094)	(0.094)			(0.069)	(0.069)	
DLG	0.043		**0.725**	**0.116**			**0.101**	0.014
	(0.025)		(0.054)	(0.039)			(0.036)	(0.014)
DLC	**0.143**		**0.357**	**0.357**			0.071	0.071
	(0.094)		(0.128)	(0.128)			(0.069)	(0.069)
AHG	0.093				**0.611**	**0.204**	0.056	0.037
	(0.039)				(0.066)	(0.055)	(0.031)	(0.026)
AHC	**0.143**	0.036			**0.250**	**0.357**	0.071	**0.143**
	(0.066)	(0.035)			(0.082)	(0.091)	(0.049)	(0.066)
ALG	0.008		0.052	0.003	0.022	0.003	**0.671**	**0.242**
	(0.005)		(0.012)	(0.003)	(0.008)	(0.003)	(0.024)	(0.022)
ALC	0.005	0.009	0.052	0.005	0.014	0.009	**0.410**	**0.495**
	(0.005)	(0.007)	(0.015)	(0.005)	(0.008)	(0.007)	(0.034)	(0.034)
Dobrushin	$\alpha(p) = 0.04$		$h = 41.57$					
Last ψ_T	0.185	0.037	0.176	0.009	0.083	0.009	0.380	0.120
Future ψ_{T+25}	0.240	0.034	0.149	0.030	0.053	0.025	0.301	0.168
Future ψ_{T+100}	0.303	0.043	0.137	0.027	0.051	0.024	0.268	0.148
long-run ψ^*	0.327	0.046	0.131	0.026	0.051	0.024	0.254	0.140
(s.e.)	(0.113)	(0.017)	(0.046)	(0.034)	(0.020)	(0.010)	(0.060)	(0.035)
$NT = 864$	$N = 108$	$T = 8$						

Transitions from row state to column state. In the state labels, D/A refer to democracy/autocracy, H/L refer to high/low state capacity, G/C refer to growth/collapse. Blank entries are zeroes; bold entries are transition probabilities of 0.10 or above. For more details see the text.

number of cases should make us cautious about over-interpretation, but the finding is at least consistent with the idea that crises can bring about political change; for discussion, see Acemoglu and Robinson (2006). It is also worth noting — with the same qualification — that autocracies with high state capacity are more than twice as likely to democratize than autocracies with low state capacity; this is consistent with Slater and Wong (2022)

Table 7: Transition counts, eight states

	DHG	DHC	DLG	DLC	AHG	AHC	ALG	ALC
DHG	90	12			2		1	
DHC	8	2	2			1	1	
DLG	3		50	8			7	1
DLC	2		5	5			1	1
AHG	5				33	11	3	2
AHC	4	1			7	10	2	4
ALG	3		19	1	8	1	247	89
ALC	1	2	11	1	3	2	87	105

Transitions from row state to column state. In the state labels, D/A refer to democracy/autocracy, H/L refer to high/low state capacity, G/C refer to growth/collapse. MFR is the mean first recurrence time. For more details see the text.

Table 8: Mean passage times, eight states

MPT/MFR	DHG	DHC	DLG	DLC	AHG	AHC	ALG	ALC
DHG		75.00	199.30	415.40	289.90	373.20	149.90	180.10
DHC	55.50		164.10	381.20	293.70	357.10	127.00	157.60
DLG	149.30	214.80		226.70	324.10	416.50	80.70	112.60
DLC	130.80	197.30	80.80		318.90	410.00	89.00	115.60
AHG	116.80	179.40	183.00	395.90		195.90	99.90	119.10
AHC	116.30	174.30	175.50	388.20	188.60		93.10	108.10
ALG	180.80	241.90	129.40	339.60	298.80	396.40		47.10
ALC	179.90	239.50	129.20	338.70	300.90	394.50	27.40	
MFR	15.30	108.30	38.00	193.80	98.00	204.70	19.70	35.70

Mean passage times from row state to column state. In the state labels, D/A refer to democracy/autocracy, H/L refer to high/low state capacity, G/C refer to growth/collapse. MFR is the mean first recurrence time. For more details see the text.

on the empirical relevance of 'democracy through strength'.

The long-run distribution implies that countries will spend slightly more than half their time (53%) under democracy, and less than half their time (45%) with high state capacity. This may seem pessimistic, but the omission of developed countries means that we understate the global extent of democracy and high state capacity. More positively for developing countries, growth, democracy and high state capacity will all be more prevalent in the long term than in the final period of the data or the 25-year projection. But this is best seen as a thought experiment, indicating what would happen if the transition probabilities were to remain constant. The recent democratic recession already suggests that transition probabilities may have changed, and this may also be true of the process of growth and convergence; on the latter see, for example, Imam and Temple (2025b) and Fiaschi and Johnson (2025). In addition, factors such as climate change and altered geopolitics may lead to very different long-run outcomes, and would need to be integrated in a more comprehensive forecast.

8 Conclusions

The roles of state capacity in growth and development remain contested. In this paper we have used finite state Markov chains to study how growth regimes and state capacity evolve and interact with each other. The approach, in combining the ideas of Quah (1993) and Pritchett (2003), broadens the set of methods available for deriving stylized facts. Most of the findings we emphasize use the probabilities of exiting particular states, and these are typically precisely estimated, despite the flexibility of the models and the large number of parameters. The longer spans of data now available make this approach increasingly informative.

The analysis points to benefits of state capacity, but these are less striking than might have been expected and even then may be overestimated. The results suggest that democracy helps to protect against output collapses, and this emerges more clearly than the benefits of high state capacity. Perhaps it is the ability to remove failing leaders which is decisive in protecting countries against the risk of ever-worsening collapse.

That said, state capacity does seem to matter. Within the set of democracies, when state capacity is high, growth is more likely to be sustained and output collapses are less likely to deepen. These results suggest that, even in democracies, state capacity may have a role to play in limiting protracted collapse and ensuring resilience. Among the possible institutional combinations we consider, output collapses are most likely to deepen for autocracies with low state capacity. The results suggest that, to lessen the risks of collapse, efforts to build state capacity should go hand in hand with supporting democratic governance.

Transitions between broad categories of state capacity are rare. In our first analysis, the long-run distribution implies that countries will ultimately spend a third of the time with high state capacity, around a third of the time growing with low state capacity, and around a third of the time in an output collapse or stagnating with low state capacity. In the extended analysis that includes political institutions, we find that countries will spend slightly more than half their time under democracy. Although high-capacity autocracies seem more likely to democratize, this is based on a small number of cases and caution is needed until more years of data become available.

Overall, the results point to the importance of institutional development and its support by the international community. Donors can provide technical assistance to help developing countries build their administrative and legal frameworks, link financial aid to progress in governance reforms, and support civil society organizations. The present value of output losses in a collapse can be enormous, even before considering the broader humanitarian toll, so policies that lessen the risk of collapse will rank among the most important potential interventions.

One way to take the analysis further would be to distinguish between components of state capacity, as in Andersen et al. (2014b). But as usual with cross-country data, the small number of countries limits the ability to investigate or refine detailed hypotheses, which in turn means that policy conclusions should be cautious. To the extent that such evidence can shift the burden of proof, the results in this paper support those who advocate for democracy and investments in state capacity. This leaves open questions about precisely which reforms could help most, and what happens when governments have economic or political incentives that deter them from institutional reform. Our chosen form of approach is largely silent here, but its results confirm that they remain good questions.

9 Appendix

9.1 Sample countries

Afghanistan, Albania, Algeria, Argentina, Bahrain, Bangladesh, Barbados, Benin, Bhutan, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burma/Myanmar, Burundi, Cambodia, Cameroon, Central African Republic, Chad, Chile, China, Colombia, Costa Rica, Cuba, Cyprus, Democratic Republic of the Congo, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eswatini, Ethiopia, Fiji, Gabon, Ghana, Guatemala, Guinea, Guyana, Haiti, Honduras, Hungary, India, Indonesia, Iran, Iraq, Israel, Ivory Coast, Jamaica, Jordan, Kenya, Kuwait, Laos, Lebanon, Lesotho, Liberia, Libya, Madagascar, Malawi, Malaysia, Maldives, Mali, Malta, Mauritania, Mauritius, Mexico, Mongolia, Morocco, Nepal, Nicaragua, Niger, Nigeria, North Korea, Oman, Pakistan, Panama, Paraguay, Peru, the Philippines, Poland, Qatar, Republic of the Congo, Romania, Rwanda, Saudi Arabia, Senegal, Sierra Leone, Singapore, Somalia, South Africa, South Korea, Sri Lanka, Sudan, Syria, Tanzania, Thailand, The Gambia, Togo, Trinidad and Tobago, Tunisia, Uganda, United Arab Emirates, Uruguay, Venezuela, Vietnam, Zambia, Zimbabwe.

9.2 The Dobrushin coefficient

Our presentation follows Stachurski (2009, section 4.3.2). Denote the transition probability from state x to state y by $p(x, y)$. The Dobrushin coefficient is then defined as:

$$\alpha(p) := \min_{(x,x')\in\mathcal{S}\times\mathcal{S}} \quad \sum_{y\in\mathcal{S}} p(x,y) \wedge p(x',y)$$

where the notation $a \wedge b := min\{a, b\}$ and the index $\alpha(p) \in [0, 1]$. It can be shown that the process is globally stable if and only if there exists a strictly positive integer t such that the $\alpha(p^t)$ associated with P^t is greater than zero. If this is true, the process will converge to a unique long-run distribution regardless of the initial conditions.[20]

For a given transition matrix P, we can check whether it implies a unique long-run distribution. If the Dobrushin coefficient $\alpha(p)$ for P is non-zero, the process is globally stable. If the coefficient is zero, we should compute the Dobrushin coefficient for an iterate of the transition matrix, P^2, and try again. As long as we can find a strictly positive integer t such that the coefficient associated with P^t is non-zero, the process is globally stable. For all the transition matrices reported in this paper, the Dobrushin coefficient is strictly positive and hence each process is globally stable.

The intuition is that, when the Dobrushin coefficient is greater than zero, separate Markov chains starting from any two states have a strictly positive chance of meeting each other in at least one state. The transition matrix is then said to be 'scrambling'.[21] This rules out cases where, for example, there are two or more absorbing states, or two or more mutually exclusive sets of states which are separately absorbing. To take an extreme example, if P is the identity matrix, every state is absorbing, the process never departs from the initial conditions, every initial distribution will be stationary, and the Dobrushin coefficient will be zero for any iterate of the transition matrix.

The coefficient is useful beyond indicating global stability. It is tightly connected to the rate of convergence to equilibrium: see Stachurski (2009, theorem 4.3.17). The higher is $\alpha(p)$, the more quickly the process will converge to the long-run distribution. And as Seneta (1988) showed, the larger is the Dobrushin coefficient, the less sensitive the long-run distribution will be to perturbations of the transition matrix. We can then give more weight to what a given matrix implies for the long run. Kremer et al. (2001) argued that Quah's analysis of mobility across income categories was sensitive to small changes in transition probabilities, but that is less of a problem in our own use of growth regimes, since there is more mobility between states. This will be reflected in the magnitude of the Dobrushin coefficient.

9.3 Bootstrap

The standard errors for the elements of the long-run distribution are based on a bootstrap with 2001 replications. The bootstrapped standard errors for the transition probabilities are typically very similar to the Anderson-Goodman asymptotic standard errors we report, except in a few cases where a state is relatively rarely observed. In those cases the bootstrapped standard errors tend to be somewhat higher.

[20] For a formal statement, see Stachurski (2009, theorem 4.3.18); a related result appears in Stokey et al. (1989, theorem 11.4).

[21] See Seneta (1979), noting that the τ coefficient used there is one minus the Dobrushin coefficient used here.

References

[1] Acemoglu, D. (2005). Politics and economics in weak and strong states. *Journal of Monetary Economics*, 52, 1199-1226.

[2] Acemoglu, D., Johnson, S., Robinson, J. and Thaicharoen, Y. (2003). Institutional causes, macroeconomic symptoms: volatility, crises and growth. *Journal of Monetary Economics*, 50(1), 49-123.

[3] Acemoglu, D. and Robinson, J. A. (2006). *Economic origins of dictatorship and democracy*. Cambridge University Press, Cambridge.

[4] Acemoglu, D. and Robinson, J. A. (2012). *Why nations fail*. Profile, London.

[5] Acemoglu, D. and Robinson, J. A. (2016). Paths to Inclusive Political Institutions. In Eloranta, J., Golson, E., Markevich, A. and Wolf, N. (eds.) *Economic History of Warfare and State Formation*. Studies in Economic History. Springer, Singapore.

[6] Acemoglu, D. and Robinson, J. A. (2019). *The narrow corridor: how nations struggle for liberty*. Penguin Press, New York.

[7] Acemoglu, D. and Robinson, J. A. (2022a). Non-Modernization: Power-Culture Trajectories and the Dynamics of Political Institutions. *Annual Review of Political Science*, 25, 323-339.

[8] Acemoglu, D. and Robinson, J. A. (2022b). Weak, Despotic, or Inclusive? How State Type Emerges from State versus Civil Society Competition. *American Political Science Review*, 1-14.

[9] Acemoglu, D., Robinson, J. A. and Torvik, R. (2020). The political agenda effect and state centralization. *Journal of Comparative Economics*, 48, 749-778.

[10] Andersen, D., Møller, J. and Skanning, S.-E. (2014a). The state-democracy nexus: conceptual distinctions, theoretical perspectives, and comparative approaches. *Democratization*, 21(7), 1203-1220.

[11] Andersen, D., Møller, J., Rørbæk, L. L., and Skaaning, S.-E. (2014b). State capacity and political regime stability. *Democratization*, 21(7), 1305-1325.

[12] Anderson, T. W. and Goodman, L. A. (1957). Statistical inference about Markov chains. *Annals of Mathematical Statistics*, 28(1), 89-110.

[13] Azariadis, C. and Stachurski, J. (2005). Poverty traps. In Aghion, P. and Durlauf, S. N. (eds.) *Handbook of Economic Growth*, Volume 1. Elsevier, Amsterdam.

[14] Bardhan, P. (2016). State and development: the need for a reappraisal of the current literature. *Journal of Economic Literature*, 54(3), 862-892.

[15] Barseghyan, L. and DiCecio, R. (2011). Cross-country income convergence revisited. *Economics Letters*, 113(3), 244-247.

[16] Berwick, E. and Christia, F. (2018). State capacity redux: integrating classical and experimental contributions to an enduring debate. *Annual Review of Political Science*, 21, 71-91.

[17] Besley, T., Burgess, R., Khan, A. and Xu, G. (2022). Bureaucracy and development. *Annual Review of Economics*, 14, 397-424.

[18] Besley, T., Ilzetzki, E. and Persson, T. (2013). Weak States and Steady States: The Dynamics of Fiscal Capacity. *American Economic Journal: Macroeconomics*, 5(4), 205-235.

[19] Besley, T. and Persson, T. (2008). Wars and State Capacity. *Journal of the European Economic Association*, 6(2-3), 522-530.

[20] Besley, T. and Persson, T. (2009). The Origins of State Capacity: Property Rights, Taxation, and Politics. *American Economic Review*, 99(4), 1218-1244.

[21] Besley, T. and Persson, T. (2010). State Capacity, Conflict, and Development. *Econometrica*, 78(1), 1-34.

[22] Besley, T. and Persson, T. (2011a). Fragile states and development policy. *Journal of the European Economic Association*, 9(3), 371-398.

[23] Besley, T. and Persson, T. (2011b). *Pillars of prosperity: the political economics of development clusters*. Princeton University Press, Princeton.

[24] Besley, T. and Persson, T. (2014). The Causes and Consequences of Development Clusters: State Capacity, Peace, and Income. *Annual Review of Economics*, 6(1), 927-949.

[25] Besley, T., Persson, T. and Dann, C. (2021). Pillars of Prosperity: A Ten-Year Update. CEPR discussion paper no. 16256.

[26] Bickenbach, F. and Bode, E. (2003). Evaluating the Markov property in studies of economic convergence. *International Regional Science Review*, 26(3), 363-392.

[27] Canen, N. and Wantchekon, L. (2022). Political Distortions, State Capture, and Economic Development in Africa. *Journal of Economic Perspectives*, 36, 101-124.

[28] Coppedge, M., Gerring, J., Knutsen, C. H., Lindberg, S. I., Teorell, J., Altman, D., Bernhard, M., Cornell, A., Fish, M. S., Gastaldi, L., Gjerløw, H., Glynn, A., Good God, A., Grahn, S., Hicken, A., Kinzelbach, K., Krusell, J., Marquardt, K. L., McMann, K., Mechkova, V., Medzihorsky, J., Paxton, P., Pemstein, D., Pernes, J., Rydén, O., von Römer, J., Seim, B., Sigman, R., Skaaning, S.-E., Staton, J., Sundström, A., Tzelgov,

E., Wang, Y., Wig, T., Wilson, S. and Ziblatt, D. (2023). V-Dem Country-Year Dataset v13.

[29] Cornell, A., Knutsen, C. H. and Teorell, J. (2020). Bureaucracy and growth. *Comparative Political Studies*, 53(14), 2246-2282.

[30] Davenport, C. (2007). State Repression and Political Order. *Annual Review of Political Science*, 10, 1-23.

[31] Dincecco, M. (2017). *State capacity and economic development: present and past*. Cambridge University Press, Cambridge.

[32] Dincecco, M. and Katz, G. (2016). State Capacity and Long-Run Economic Performance. *Economic Journal*, 126 (590), 189-218.

[33] Dincecco, M. and Wang, Y. (2024). State Capacity in historical political economy. In Jenkins, J. A. and Rubin, J. (eds.) *The Oxford Handbook of Historical Political Economy*, Oxford University Press, Oxford.

[34] Du, J. (2010). Institutional quality and economic crises: legal origin theory versus colonial strategy theory. *Review of Economics and Statistics*, 92(1), 173–179.

[35] Durlauf, S. N., Johnson, P. A. and Temple, J. R. W. (2005). Growth Econometrics. In P. Aghion and S. N. Durlauf (eds.) *Handbook of Economic Growth*, Elsevier, Amsterdam.

[36] Easterly, W. (2001). The middle class consensus and economic development. *Journal of Economic Growth*, 6, 317-335.

[37] Feenstra, R. C., Inklaar, R. and Timmer, M. P. (2015). The next generation of the Penn World Table. *American Economic Review*, 105, 3150-3182.

[38] Fergusson, L., Molina, C. A. and Robinson, J. A. (2022). The Weak State Trap. *Economica*, 89, 293-331.

[39] Fiaschi, D. and Johnson, P. (2025). (In)stability in the Dynamics of the Cross-Country Distribution of Income Per Capita. Manuscript.

[40] Fukuyama, F. (2004). The imperative of state-building. *Journal of Democracy*, 15(2), 17-31.

[41] Fukuyama, F. (2005). Building democracy after conflict: 'stateness' first. *Journal of Democracy*, 16(1), 84-88.

[42] Fukuyama, F. (2011). *The origins of political order: from prehuman times to the French Revolution*. Profile, London.

[43] Fukuyama, F. (2014). *Political order and political decay*. Profile, London.

[44] Gjerløw, H., Knutsen, C. H., Wig, T. and Wilson, M. C. (2021). *One road to riches? How state building and democratization affect economic development*. Cambridge University Press, Cambridge.

[45] Gleditsch, K. S. and Ward, M. D. (1997). Double take: a reexamination of democracy and autocracy in modern polities. *Journal of Conflict Resolution*, 41(3), 361-383.

[46] Grinstead, C. M. and Snell, J. L. (2006). *Grinstead and Snell's Introduction to Probability*. Manuscript, Dartmouth.

[47] Hausmann, R., Rodriguez, F. and Wagner, R. (2008). Growth collapses. In C. Reinhart, A. Velasco and C. Vegh (eds.) *Money, crises, and transition: Essays in honor of Guillermo Calvo*. MIT Press, Cambridge, MA.

[48] Huntington, S. P. (1968). *Political order in changing societies*. Yale University Press, New Haven.

[49] Imam, P. and Temple, J. R. W. (2024a). Political institutions and output collapses. *European Journal of Political Economy*, 85, 102573.

[50] Imam, P. and Temple, J. R. W. (2024b). At the Threshold: The Increasing Relevance of the Middle-Income Trap. CEPR discussion paper No. 19346.

[51] Imam, P. and Temple, J. R. W. (2025a). Dynamic development accounting and relative income traps. CEPR discussion paper no. 20152.

[52] Imam, P. and Temple, J. R. W. (2025b). Growth, interrupted: How crises delay global convergence. Manuscript, May.

[53] Johnson, C. (1982). *MITI and the Japanese miracle: the growth of industrial policy, 1925-75*. Stanford University Press, Stanford, Calif.

[54] Johnson, N. D. and Koyama, M. (2017). States and economic growth: capacity and constraints. *Explorations in Economic History*, 64, 1-20.

[55] Johnson, P. A. (2005). A continuous state space approach to 'Convergence by Parts'. *Economics Letters*, 86(3), 317-321.

[56] Klomp, J. and de Haan, J. (2009). Political institutions and economic volatility. *European Journal of Political Economy*, 25(3), 311-326.

[57] Knack, S. and Keefer, P. (1995). Institutions And Economic Performance: Cross-Country Tests Using Alternative Institutional Measures. *Economics and Politics*, Wiley Blackwell, 7(3), 207-227.

[58] Knutsen, C. H. (2013). Democracy, state capacity, and economic growth. *World Development*, 43, 1-18.

[59] Kremer, M., Onatski, A. and Stock, J. (2001). Searching for prosperity. *Carnegie-Rochester Conference Series on Public Policy*, 55(1), 275-303.

[60] Kremer, M., Willis, J. and You, Y. (2022). Converging to Convergence. *NBER Macroeconomics Annual*, 32, 337-412.

[61] Malik, A. and Temple, J. R. W. (2009). The geography of output volatility. *Journal of Development Economics*, 90(2), 163-178.

[62] Mann, M. (1986). The autonomous power of the state: its origins, mechanisms, and results. In Hall, J. (ed.) *Studies in History*. Oxford University Press, Oxford.

[63] Mazzuca, S. L. and Munck, G. L. (2014). State or democracy first? Alternative perspectives on the state-democracy nexus. *Democratization*, 21(7), 1221-1243.

[64] Mazzuca, S. L. and Munck, G. L. (2020). *A middle-quality institutional trap: democracy and state capacity in Latin America*. Cambridge University Press, Cambridge.

[65] Migdal, J. (1988). *Strong societies and weak states : state-society relations and state capabilities in the Third World*. Princeton University Press, Princeton.

[66] Millemaci, E., Monteforte, F. and Temple, J. R. W. (2025). Electing for stability: democracy and output volatility, 1960-2019. *Economics Letters*, 247, 112136.

[67] Norris, J. R. (1997). *Markov chains*. Cambridge University Press, Cambridge.

[68] North, C. C., Wallis, J. J., Webb, S. B. and Weingast, B. R. (2013). *In the shadow of violence: politics, economics, and the problem of development*. Cambridge University Press, Cambridge.

[69] North, D. C., Wallis, J. J. and Weingast, B. R. (2009). *Violence and social orders*. Cambridge University Press, Cambridge.

[70] Ogilvie, S. (2022). State capacity and economic growth: cautionary tales from history. *National Institute Economic Review*, 262, 28-50.

[71] Ogilvie, S. and Carus, A. W. (2014). Institutions and Economic Growth in Historical Perspective. In P. Aghion and S. Durlauf (eds.), *Handbook of Economic Growth*, Volume 2, Elsevier, Amsterdam.

[72] O'Reilly, C. and Murphy, R. H. (2022). An index measuring state capacity, 1789-2018. *Economica*, 89, 713-745.

[73] Pritchett, L. (2003). A toy collection, a socialist star and a democratic dud: Growth theory, Vietnam, and the Philippines. In Rodrik, D. (ed.) *In search of prosperity: analytical narratives on economic growth*. Princeton University Press, Princeton.

[74] Proudman, J., Redding, S. and Bianchi, M. (1998). Is international openness associated with faster economic growth? In Proudman, J. and Redding, S. (eds.) (1998). *Openness and growth*. Bank of England, London.

[75] Quah, D. (1993). Empirical cross-section dynamics in economic growth. *European Economic Review*, 37(2-3), 426-434.

[76] Rodrik, D., Subramanian, A. and Trebbi, F. (2004). Institutions Rule: The Primacy Of Institutions Over Geography And Integration In Economic Development. *Journal of Economic Growth*, 9, 131-165.

[77] Rose, R. and Shin, D. C. (2001). Democratization backwards: the problem of third-wave democracies. *British Journal of Political Science*, 31(2), 331-354.

[78] Savoia, A. and Sen, K. (2012). Measurement and evolution of state capacity: exploring a lesser-known aspect of governance. ESID Working Paper No.10, University of Manchester.

[79] Savoia, A. and Sen, K. (2015). Measurement, evolution, determinants, and consequences of state capacity: a review of recent research. *Journal of Economic Surveys*, 29(3), 441-458.

[80] Sen, K. (2013). The political dynamics of economic growth. *World Development*, 47, 71-86.

[81] Seneta, E. (1979). Coefficients of ergodicity: structure and applications. *Advances in Applied Probability*, 11(3), 576-590.

[82] Seneta, E. (1988). Perturbation of the long-run distribution measured by ergodicity coefficients. *Advances in Applied Probability*, 20(1), 228-230.

[83] Skocpol, T. (1985). Bringing the State Back In: Strategies of Analysis in Current Research. In Evans, P. B., Rueschemeyer, D. and Skocpol, T. (eds.) *Bringing the state back in*. Cambridge University Press, Cambridge.

[84] Slater, D. and Wong, J. (2022). *From development to democracy: the transformations of modern Asia*. Princeton University Press, Princeton.

[85] Soetaert, K. (2020). diagram: Functions for Visualising Simple Graphs (Networks), Plotting Flow Diagrams. R package version 1.6.5. https://CRAN.R-project.org/package=diagram

[86] Spedicato, G. A. (2017). Discrete time Markov chains with R. *The R Journal*, 7. https://journal.r-project.org/archive/2017/RJ-2017-036/index.html

[87] Stachurski, J. (2009). *Economic dynamics: Theory and computation*. MIT Press, Cambridge, MA.

[88] Stokey, N., Lucas, R. E., Jnr., with Prescott, E. C. (1989). *Recursive methods in economic dynamics*. Harvard University Press, Cambridge, MA.

[89] Temple, J. R. W. (2021). Growth econometrics.*Oxford Research Encyclopedia of Economics and Finance*, Oxford University Press online, April 2021.

[90] Vu, T. V. (2025). The Growth Effect of State Capacity Revisited. *Oxford Bulletin of Economics and Statistics*, 87, 499-538.

[91] Weil, S. (1962). The power of words. Trans. Richard Rees. In Weil, S. (2020). *The power of words*. Penguin, London.

[92] Wolf, M. (2023). *The crisis of democratic capitalism*. Allen Lane, London.