Fragile States and Development Policy*

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Abstract

It is widely recognized that fragile states are key symptoms of under-development in many parts of the world. Such states are incapable of delivering basic services to their citizens and political violence is commonplace. As of yet, mainstream development economics has not dealt in any systematic way with such concerns and the implications for development assistance. This paper puts forward a frame-work for analyzing fragile states and applies it to a variety of development policies in different types of states.

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1 Introduction

The donor community has increasingly begun to confront the implications for development policy of the prevalence of weak, fragile, and failing states in some of the world's poorest countries. And this has lead to a gradual shift in focus towards the specific problems that arise in such states (see, e.g., McGillivray, 2006). As a result, there is now an emerging policy literature which worries about how to deal with such states and what can be done to improve their situation (see, e.g., OECD, 2010a).

Specific lists of fragile states have been produced by national aid agencies, international organizations, and individual research teams.[1] To illustrate, consider the 2009 Polity IV classification of fragile states which is summarized in Figure 1.[2] In this figure, countries are classified according to their decile in the distribution of fragility. Countries with the greatest fragility are colored in black while those with least fragility are in white. Intermediate deciles are colored in shades of gray. According to this classification, the most fragile states are found in Subsaharan Africa and South Asia.

The Polity IV project on which Figure 1 is based is admirably clear in explaining its eight underlying criteria, which include factors such as security effectiveness, political legitimacy, and economic effectiveness. These concepts are all based on specific empirical indicators that are aggregated in a transparent way. Such indicators certainly create a basis for debate about which factors shape state fragility. But the conceptual underpinning of the measurement is far from clear, and sometimes appears to confuse symptoms and causes. For example, low income is included as a component of state fragility. But is poverty a product of state fragility or a cause? The same can be said for the measures of violence or insecurity, which also figure prominently in the definition.

Typically, development agencies are less clear about their basis for classifying a state as fragile. For example, USAID (2005) uses two criteria, each of which is sufficient to have a state classified as fragile: vulnerability and crisis. Vulnerability refers to those "states unable or unwilling to adequately assure the provision of security and basic services to significant portions of their populations and where the legitimacy of the government is in question.

[1] Looking at different classifications of fragility (however termed) leads to rather similar rankings of states.

[2] Rice and Patrick (2008) give an overview of different attempts to measure state weakness or fragility.

This includes states that are failing or recovering from crisis." Crisis refers to "states where the central government does not exert effective control over its own territory or is unable or unwilling to assure the provision of vital services to significant parts of its territory, where legitimacy of the government is weak or nonexistent, and where violent conflict is a reality or a great risk." As far as we can tell, these criteria are applied subjectively.

Notwithstanding the attention to fragile states by the policy community, mainstream development economists have paid little attention to these problems in spite of a resurgence of interest in the political economics of development.

Our paper tries to take some steps in this direction by exploring the origins of state fragility and highlighting two main pathologies that need to be explained: *state ineffectiveness* in enforcing contracts, protecting property, providing public goods and raising revenues, and *political violence* either in the form of repression or civil conflict. We propose a theoretical framework, in which the roots of these pathologies can be explored.[3] In this framework, a government is endowed with a level of fiscal capacity (the ability to tax) and a level of legal capacity (the ability to support markets). Policy decisions include how much to spend on public goods and transfers. Political institutions may constrain the distribution of transfers; stronger, more cohesive, institutions prevent incumbents from using the state to make transfers solely to the incumbent group. Governments can make three kinds of investments: (i) in fiscal capacity; (ii) in legal capacity, and (iii) in violence, the latter as a means of holding on to power. Opposition groups can also invest in violence if they choose to, and do so in order to acquire power.

Seen through the lens of our model, an ineffective state is one which has made few investments in fiscal and legal capacity, and a violent state is one where the government and opposition invest in violence to maintain or acquire political power. A common interest in providing public goods, fostered either by circumstances or cohesive political institutions, can eliminate both of these problems. However, when institutions are non-cohesive either pathology may emerge and the model allows us to explore the conditions for their emergence, thus uncovering the roots of state fragility. Having an explicit theory enables us to clarify what is exogenous and what is endogenous.

[3]The paper builds on our earlier work, especially Besley and Persson (2009) and (2010). Besley and Persson (2011) provide a full exploration of the ideas developed here, and a discussion of microoeconomic and micropolitical foundations for the reduced-form relations used in this paper.

It also enables us to clarify what is a symptom and what is a cause – a very murky distinction in the present policy debate.

The main output of our theoretical model is a matrix of parameter ranges, defining the roots of different state pathologies. States that are peaceful and have high levels of state capacity have common interests and/or cohesive political institutions. In the absence of such commonalities, however, the details really matter. Pathologies are identified with cases in which there is either repression or civil war on the one hand, and a weak or redistributive state on the other. On the basis of this observation, we suggest an *Anna Karenina Principle* of state organization, paraphrasing the 1st line of Leo Tolstoy's 1870s novel):

> "All happy families resemble each other; every unhappy family is unhappy in its own way."

In our case, common-interest states are the happy families with peace as well as high state effectiveness. As in the Tolstoy quote, the unhappy families come in many forms. This principle reflects a real, practical difficulty in dealing with fragile states, namely to understand the factors that are driving the state in a particular direction.

Our theoretical framework helps to sharpen the policy discussion by highlighting how different factors contribute to state fragility. The focus on fragile states underlines a wider set of issues, which are crucial to discussions about development policy. It is well understood that the problem of underdevelopment reflects a complex array of interdependent factors which cluster together, and where low income and living standards make up just one dimension. The notion of a fragile state is useful in highlighting this multidimensionality, and in getting away from excessive emphasis on income and insufficient emphasis on state ineffectiveness and political violence.

Our analysis also serves to highlight some of the policy dilemmas as it allows us to think about the consequences of development assistance. Specifically, we use our model to analyze the effects of various forms of assistance in various types of countries. This analysis takes into account the equilibrium responses in the recipient country in terms of policymaking, state-capacity investments and investments in violence and how these depend on the form of intervention as well as any specific pathologies with regard to state ineffectiveness or the propensity for political violence of different types.

A large amount of aid is given by rich countries to nations in the developing world. Official Development Assistance (ODA) comes mainly from the

23 members of the Development Assistance Committee (DAC). According to the OECD, the total figure in 2009 is around $123 billion (this figure, as others below, is in fixed 2008 prices), which is the highest number ever recorded. While the amount of aid kept increasing in the post-war period, it started falling immediately after the end of the cold war, but then picked up again. In 2002 it surpassed its previous peak of $86 billion from 1992, and has kept increasing since then. While aid targets for rich countries have been set at 0.7% of Gross National Income, very few countries meet these targets and, in fact, the trend is declining over time. The amount of aid from the DAC countries today stands at about 0.31 of their total GDP, as opposed to 0.54 in 1961.

Out of the $120 billion of total ODA given in 2008, about 30% was given indirectly through contributions to multilateral institutions like the European Union and the World Bank. About one sixth came in the form of Technical Cooperation (plus additional indirect amounts through multilateral institutions). On top of ODA, additional aid is given through the private and institutional sector, with more than $20 billion channeled by NGOs. The largest regional recipient of aid is Sub-Saharan Africa, which received 33% of all ODA in 2007-2008, followed by 21% to Middle East-North Africa, about 15% each to South-Central Asia and the rest of Asia, 9% to Latin America, and 4% to Europe.[4]

Exactly what can be done to improve the well-being of citizens in poor nations remains a controversial topic.[5] A shining example, which buoyed interest and enthusiasm for aid, was the experience of the Marshall plan for rebuilding post World War II Germany and other parts of Europe. Between 1948 and 1951, the U.S. transferred around $13 billion to European economies. This episode created a sense that large-scale resource transfers could make a significant difference to economic development, a sense that was further underpinned by the so-called *Truman Doctrine,* which called for a global focus on the plight of the developing world.

Arguably, the Marshall plan fuelled the belief that lack of resources is the key impediment to economic development and aid flows are necessary to build public institutions and stocks of capital. Countries may eventually achieve a successful development path if left to themselves, but a helping hand of

[4]See OECD (2010b) for these background figures. Gupta, Patillo, and Wagh (2006), give an overview of trends in overall aid flows during 1960-2004.

[5]See Riddell (2007) for a review. Temple (2010) provides an excellent review of many of the economic debates.

international transfers would speed up that progress. Chenery and Strout (1966) is a key exposition of the underlying ideas, and a modern statement of a similar view is Sachs (2005).

The real-world experience has not fulfilled the rather romantic vision of early aid traditionalists. Aid pessimists point to the fact that much of aid would not survive any reasonable cost-benefit test. Domestic political agendas of governments in poor countries have frequently not supported economic development, and these governments often lack the technical competence to spend resources wisely. Because if this, it is argued, much aid is wasted and does not contribute to developmental ends. Bauer (1972, 1975) was an early aid pessimist, while a modern aid critique is strongly stated in Easterly (2006).[6]

More recently, some observers have attempted to reconcile the two views, by being more optimistic on conditionality and the ability of analysts to identify the underlying pathologies. Certainly, traditionalists have had a naive view of the workings of political institutions or the ability to navigate around political constraints. Without a more forthright analysis of the institutional environment, it is hard to make progress. Collier (2007) can be seen as an exponent of this revisionist view.

Our attempt in this paper to map out different kinds of states and the consequences of different forms of development assistance can be seen as an effort to elucidate such a revisionist view. Even though our exploration is stylized and theoretical, the model gives a clear sense of the complexity of the issues and policy dilemmas. The exact impact of aid will likely vary with institutions as well as circumstances. Generalizations about the best course of action are impossible given the heterogeneity in experience and the limited empirical knowledge about several of the channels uncovered by our theoretical analysis. This underlines the difficulties the donor community has to grapple with when facing the problems of fragile states.

The remainder of the paper is organized as follows. In Section 2, we lay out a canonical two-period model with investments in state capacity and political violence. Section 3 puts the model to work by investigating the effects of different forms of development policy – beginning with cash transfers, but branching out to other forms like technical assistance and post-conflict assistance. In Section 4, we sketch some extensions of the analysis.

[6] Djankov, Montalvo and Reynal-Querol (2008) argue that aid leads to a deterioration in the quality of institutions.

Section 5 concludes.

2 Theoretical Framework

The modeling approach draws on our earlier work: Besley and Persson (2009, 2010, 2011).[7] We develop a two-period approach to investments in state capacity and violence.

2.1 Basic set-up

There are two time periods $s = 1, 2$ with two groups of individuals, A and B, each of which has comprises half the population. Every individual has wage rate $\omega(\pi_s)$ where $\omega(\cdot)$ is an increasing, concave function, and where π_s is the government's legal capacity. There are no savings.

At the beginning of $s = 1$, one group holds power and we will refer to this group as the incumbent $I_1 \in \{A, B\}$. The other group is the opposition $O_1 \in \{A, B\}$. Between the two periods, there can be a transition of power. This is affected by investments in political violence by the incumbent and opposition. In period 1, the opposition group O_1 can mount an insurgency with army $L^O \leq \overline{L}^O$, paid for within the group, at marginal cost of funds ν. We interpret ν as a reduced form representation of how well-organized and well-funded is the opposition. The incumbent group I_1 can invest in army $L^I \leq \overline{L}^I$, paid out of the public purse, at marginal cost λ_1. There is no conscription: each soldier is just paid the period-1 wage, namely $\omega(\pi_1)$.

The probability that the opposition takes over depends on the conflict technology $\gamma(L^O, L^I, \xi)$ which is increasing in L^O, and decreasing in L^I. The winner becomes next period's incumbent, $I_2 \in \{A, B\}$ and the loser becomes the new opposition, $O_2 \in \{A, B\}$. If nobody takes up arms, then the transition probability is $\gamma(0, 0, \xi)$. The parameter ξ is an index of the marginal gain from fighting – see Assumption 2 below.

We assume that utility is linear and depends on the quantities of public and private goods:

$$u_s^J = x_s^J + \alpha_s g_s \ ,$$

[7] Prior contributions related to the analysis in this paper include Acemoglu (2005), Bates (2008), Caselli (2006), and Weingast (2005).

where c_s^J denotes private consumption of a group-J member at s, and g_s is the consumption of public goods with α_s denoting their value. One archetypal example of g_s is "defense", in which case α_s is the "threat of external conflict".

Private consumption in period s is

$$x_s^J = \begin{cases} (1-\tau_1)\,\omega(\pi_1) + r_1^J - \delta^J \nu\omega(\pi_1)\,L^O & \text{at } s=1 \\ (1-\tau_2)\,\omega(\pi_2) + r_2^J & \text{at } s=2\ . \end{cases}$$

where r_s^J is a transfer targeted towards group J and $\delta^J = 1$, if $J = O$, and 0 if $J = I$. The variable τ_s is fiscal capacity, a costly investment made one period ahead.[8]

The value of public goods stochastic. We assume a two-point distribution $\alpha_s \in \{\alpha_L, \alpha_H\}$, where $\alpha_H > 2 > \alpha_L > 1$, and Prob$[\alpha_s = \alpha_H] = \phi$. Shocks to α_s are iid over time and we assume that the realization of α_s is known when policy is set. This captures uncertainty over the use state resources in future which depends on the demand for common-interest public goods. For example, the citizens may not know whether there will be a threat of external war in the future.

The period-1 incumbent can invest in both legal and fiscal capacity. We take the initial stocks $\{\pi_1, \tau_1\}$ as given and, for simplicity, assume that both kinds of investment are irreversible. Fiscal and legal capacity can be augmented by non-negative investments $\{\pi_2 - \pi_1, \tau_2 - \tau_1\}$. Investment in legal capacity takes the form of courts, judges, credit and property registries. Such investments are associated with a convex cost: $\mathcal{L}(\pi_2 - \pi_1)$, where $\mathcal{L}_\pi(0) = 0$. In the case of fiscal capacity, the investment can be thought of as developing a tax authority, its compliance structures and infrastructure to enforce an income tax (or impose a value added tax). We posit a convex cost $\mathcal{F}(\tau_s - \tau_{s-1})$ of investing in fiscal capacity with $\mathcal{F}_\tau(0) = 0$.

Government decisions at date s comprise $\left\{g_s, \{r_s^J\}_{J=I,O}, m_s\right\}$, where

$$m_s = \begin{cases} \mathcal{F}(\tau_2 - \tau_1) + \mathcal{L}(\pi_2 - \pi_1) + \omega(\pi_1)\,L^I & \text{if } s=1 \\ 0 & \text{if } s=2 \end{cases}$$

is the cost of investing in legal capacity, fiscal capacity and violence in period

[8] In our earlier work, we work with constraints on the government's tax and regulatory policies: $t_s \leq \tau_s$ and $p_s^J \leq \pi_s$. Under the same assumptions as in this paper, we show in Besley and Persson (2011) that it is always optimal for the incumbent to fully exploit both legal and fiscal capacity in every period. Thus, we skip that step here.

s. The government budget constraint is[9]

$$R + \tau_s \omega = g_s + m_s + \frac{r_s^I + r_s^O}{2} \ , \tag{1}$$

where R is any additional revenue source accruing only to government in the form of natural resource ownership and foreign aid. We will suppose that the level of such resources is fixed and known ex ante.

Political institutions constrain the incumbent who must give a share σ (≤ 1) to the opposition group for any unit of transfers that it gives to its own group. It is more convenient to work with the parameter $\theta = \frac{\sigma}{1+\sigma} \in [0, \frac{1}{2}]$ to represent more "cohesive" institutions. With θ close to $1/2$, there is equal sharing and θ close to zero represents a situation with weak constraints. A higher value of θ corresponds to greater checks and balances on executive or better representation of the opposition in government.

The timing of decisions in the model is as follows:

1. There is an initial level of state capacity $\{\tau_1, \pi_1\}$ and an incumbent group I_1.

2. Nature determines the period-1 value of public goods: α_1.

3. The incumbent chooses period-1 policies $\{r_1^I, r_1^O, g_1\}$ and investments in period-2 state capacities τ_2 and π_2. Simultaneously, the incumbent and opposition choose their investments in violence: $\left\{L^I, L^O\right\}$.

4. Period-1 consumption takes place.

5. The period-1 incumbent remains in power with probability $1-\gamma(L^O, L^I, \xi)$ and nature determines the period-2 value of public goods: α_2.

6. The period-2 incumbent chooses second-period policies $\{r_2^I, r_2^O, g_2\}$.

7. Period-2 consumption takes place.

[9] This formulation asssumes that fiscal capacity is always fully exploited. In the underlying research (Beslsy and Persson 2009, 2010, 2011), we allow the government to set a tax rate on income, t_s, under the constraint $t_s \leq \tau_s$. There, we show that under the assumptions of this paper, any incumbent does indeed exploit fiscal capacity to the limit, fulfilling this constraint with equality.

We look for a sub-game perfect equilibrium in policy, violence and state capacity investments. Since the problem has a conveniently recursive structure, we are able to study these three parts separately beginning with policy choices in each period. For the violence and state capacity investment decisions, we work backwards with citizens forming rational expectations about the period-2 policy outcome.

2.2 Policy

The optimal public spending choices $\left\{g_s, r_s^I, r_s^O\right\}$ are made by the period s incumbent and maximize:

$$\alpha_s g_s + (1-\tau_s)\,\omega\left(\pi_s\right) + r_s^I \ ,$$

subject to $r_s^O \geq \sigma r_s^I$ and the government budget constraint, (1). We need to solve for two dimensions of policy: transfers and public-goods provision.

To derive the optimal levels of transfers, we use the government budget constraint to obtain:

$$r_s^J = \beta^J[R + \tau_s\omega\left(\pi_s\right) - g_s - m_s] \ ,$$

where $\beta^I = 2(1-\theta)$ and $\beta^O = 2\theta$. The revenue available for transfers is any part not spent on public goods, g_s or investments m_s. Transfers are divided between the two groups depending on the cohesiveness of institutions, as measured by θ. Since $\beta^I \geq \beta^O$, the incumbent group will obtain a higher level of transfers.

The optimal level of public-good provision is given by:

$$G\left(\alpha_s, \tau_s\right) = \begin{cases} R_s + \tau_s\omega - m_s & \text{if } \ \alpha_s \geq 2\left(1-\theta\right) \\ 0 & \text{otherwise .} \end{cases}$$

All residual public revenues are spent on either transfers or public goods in period s, depending on the realization of the value of public goods: α_s. If institutions are cohesive (θ is close to one half), then all spending is on public goods and none is on transfers.

Plugging in these optimal policies, we derive the following "indirect" payoff function for group J in period s:

$$\begin{aligned} W(\alpha_s, \tau_s, \pi_s, R_s, m_s, \beta^J) \ &= \ \alpha_s G\left(\alpha_s, \tau_s\right) + (1-\tau_s)\omega\left(\pi_s\right) + \\ &\quad \beta^J[R + \tau_s\omega\left(\pi_s\right) - G\left(\alpha_s, \tau_s\right) - m_s] \ . \end{aligned}$$

For future reference, it is useful to define "value functions"

$$U^I(\tau_2, \pi_2) = \left[\phi W\left(\alpha_H, \tau_2, \pi_2, R_2, 0, \beta^I\right) + (1-\phi) W\left(\alpha_L, \tau_2, \pi_2, R_2, 0, \beta^I\right)\right]$$

and

$$U^O(\tau_2, \pi_2) = \left[\phi W\left(\alpha_H, \tau_2, \pi_2, R_2, 0, \beta^O\right) + (1-\phi) W\left(\alpha_L, \tau_2, \pi_2, R_2, 0, \beta^O\right)\right]$$

for being the incumbent or opposition group in period 2 depending on the state variables $\{\tau_2, \pi_2\}$. These are the expected value of arriving in period 2 with state capacities $\{\tau_2, \pi_2\}$ either as a member of the incumbent or opposition group.

Putting these together, the expected period-2 utility of group J in period 1is:

$$\begin{aligned} &W(\alpha_1, \tau_1, m_1, \beta^J) \\ &+(1-\gamma(L^O, L^I, \xi))U^I(\tau_2, \pi_2) + \gamma(L^O, L^I, \xi)U^O(\tau_2, \pi_2) \end{aligned} \tag{2}$$

for the incumbent group and

$$\begin{aligned} &W(\alpha_1, \tau_1, m_1, \beta^J) - \nu\omega(\pi_1) L^O \\ &+\gamma(L^O, L^I, \xi)U^I(\tau_2, \pi_2) + \left[1-\gamma(L^O, L^I, \xi)\right] U^O(\tau_2, \pi_2) \end{aligned} \tag{3}$$

for the opposition group. For the opposition, we have deducted the cost of violence: $\nu\omega(\pi_1) L^O$, while, for the incumbent, violence is funded from the public purse.

These payoffs are key to understanding the determinants of investments in violence and state capacity. We begin by study the Nash equilibrium between the incumbent and opposition group in their violence decisions.

2.3 Investments in political violence

The prospective trade-off for the incumbent and opposition, as they contemplate investing in violence at stage 3, is to weigh a higher chance of period-2 political control against the cost of the investment.[10] To study this as simply as possible, and to put some structure on the problem, we impose the following restrictions on the conflict technology:

[10]The structure of the conflict model used here is a natural dynamic extension of the set-up in Besley and Persson (2010).

Assumption 1 *For all* $L^J \in \left[0, \overline{L}^J\right]$, *we have*:

a. if $\gamma \in (0,1)$, $\gamma_O > 0, \gamma_I < 0$, $\gamma_{OO} < 0$, $\gamma_{II} > 0$,

b. $\frac{-\gamma_I(0,0;\xi)}{\gamma_O(0,0;\xi)} \geq \frac{\alpha_H}{\nu}$, *and*

c. $\frac{\gamma_I \gamma_{OO}}{\gamma_O} \geq \gamma_{IO} \geq \frac{\gamma_O \gamma_{II}}{\gamma_I}$.

Condition **a** just says that fighting always has positive returns for both groups, albeit at a decreasing rate. The property in **b** ensures that the incumbent has a higher marginal return to fighting, when both parties do not invest in violence. It guarantees that the incumbent has a sufficient advantage in the returns to fighting relative to the rebels. Finally, **c** restricts the extent of any strategic complementarities or substitutabilities in the conflict technology. Assumption 1 is satisfied by a number of reasonable, and commonly used, contest functions.[11]

We will also make:

Assumption 2 $-\gamma_{I\xi}\left(L^O, L^I; \xi\right) > 0$ and $\gamma_{O\xi}\left(L^O, L^I; \xi\right) < 0$.

This says that ξ indexes the advantage of the incumbent: raising ξ increases the incumbent's marginal return to fighting while reducing the opposition's marginal return to fighting (in terms of each group's probability of holding power in period 2).

We now characterize the Nash equilibrium in violence levels denoted as $\left\{\hat{L}^O, \hat{L}^I\right\}$. These maximize (2) and (3). The first-order conditions are:

$$\gamma_I(\hat{L}^O, \hat{L}^I, \xi)\left[U^O\left(\tau_2, \pi_2\right) - U^I\left(\tau_2, \pi_2\right)\right] - \lambda_1 \omega\left(\pi_1\right) \leq 0 \ ,$$

where $\lambda_1 = \max\left\{\alpha_1, 2\left(1-\theta\right)\right\}$ and

$$\gamma_O(\hat{L}^O, \hat{L}^I, \xi)\left[U^I\left(\tau_2, \pi_2\right) - U^O\left(\tau_2, \pi_2\right)\right] - \nu \omega\left(\pi_1\right) \leq 0 \ .$$

This way of writing the first-order conditions makes transparent that the marginal benefit of investing in violence comes from the increased probability of being the incumbent in period 2, while the cost is the resources that are needed finance this violence whether from public or private funds. For both

[11] See Dixit (1987) for an overview of contest functions.

groups, the benefit is proportional to $\left[U^O(\tau_2,\pi_2) - U^I(\tau_2,\pi_2)\right]$, the value of being an incumbent in period 2. The parameter λ_1 is the opportunity cost of public funds to the incumbent. A key observation for the result to follow, is that:

$$\left[U^I(\tau_2,\pi_2) - U^O(\tau_2,\pi_2)\right] = \omega(\pi_1)\,2(1-2\theta)\,Z\ ,$$

where

$$Z = (1-\phi)\left[\frac{R+\tau_2\omega(\pi_2) - G(\alpha_L,\tau_2)}{\omega(\pi_1)}\right]$$

is the benefit from holding office in terms of residual tax revenues relative to the opportunity cost of fighting determined by the period-1 wage. This variable will determine the outcome in cases where common interests and political institutions are weak.

We now use the two first-order conditions to characterize the Nash equilibrium and its dependence on some key parameters. Our first result gives a guaranteed condition for peace:

Proposition 1 *If $\alpha_L \geq 2(1-\theta)$ or ϕ is close to 1, neither group invests in political violence, i.e. $\hat{L}^I = \hat{L}^O = 0$.*

This proposition says that as long as institutions are sufficiently cohesive, or there is a high enough demand for public goods, there is never any political violence. In this case, the marginal benefit of being the incumbent goes to zero as there is full agreement over policy. Since investing in violence is costly, neither group chooses to invest anything.

We now explore what happens when these conditions do not hold.

Proposition 2 *If Assumption 1 holds, $\alpha_L < 2(1-\theta)$ and ϕ is below 1, there are two thresholds $Z^I(\theta,\phi;\xi)$ and $Z^O(\theta,\phi;\xi)$, where*

$$\begin{aligned} Z^I(\theta,\phi;\xi) &= -\frac{\lambda_1}{\gamma_I(0,0;\xi)(1-\phi)2(1-2\theta)} \\ &< Z^O(\theta,\phi;\xi) = \frac{\nu}{\gamma_O(0,0;\xi)(1-\phi)2(1-2\theta)} \end{aligned}$$

such that:

1. *if $Z \leq Z^I$, there is peace with $\widehat{L}^O = \widehat{L}^I = 0$*
2. *if $Z \in \left(Z^I, Z^O\right)$, there is repression with $\widehat{L}^I > \widehat{L}^O = 0$*

3. if $Z \geq Z^O$, there is civil conflict with $\widehat{L}^I, \widehat{L}^O > 0$.

Moreover, $\widehat{L}^O$ and $\widehat{L}^I$, whenever positive, increase in Z .

The proof is in the Appendix.

The proposition describes three states of violence. When Z is below Z^I, no conflict erupts, as both incumbent and opposition accept the (probabilistic) peaceful allocation of power, where the opposition takes over with probability $\gamma(0,0;\xi)$. When $Z \in \left[Z^I, Z^O\right]$, the government invests in violence to increase its survival probability, but the opposition does not invest in conflict. It is natural to label this case government repression. Finally, when $Z > Z^O$, the opposition mounts an insurgency, which is met with force by the incumbent group, and we have civil war.

Our results have some striking empirical implications, when the logic of political violence is expressed as a function of the latent variable Z. More precisely, our theory predicts an *ordering* in Z of the three violence states: peace, repression, and civil war.[12] The existing literatures on political violence has studied repression and civil war as separate phenomena.[13] Our model provides a means of thinking about their common roots.

Four empirical corollaries to Proposition 2 are worth noting in the case where political institutions are not cohesive and/or ϕ is far enough from one so that political violence is a possibility, i.e. the case where Proposition 1 does not apply. First, higher wages, $\omega(\pi_1)$, reduce the likelihood that an economy will experience either repression or civil war since an increase in the wage increases the opportunity cost of fighting. Second, higher natural resource rents, or other exogenous forms of income such as aid increase the likelihood that an economy will be in repression or civil war. Formally, this is because Z is higher. Third, higher expected spending on common interest public goods, due to higher ϕ decreases the likelihood that an economy will be in repression or civil war. This is because Z is lower when this is the case. Fourth, political institutions with more checks and balances (more minority representation) leading to a higher value of θ, decrease the likelihood of observing repression or civil war.

[12] These are explored empircally in Besley and Persson (2010).

[13] Davenport (2007) reviews the literature on the former and Blatman and Miguel (2009) the literature on the latter.

2.4 Equilibrium Political Turnover

We can now define the equilibrium rate of political turnover. Plugging in the Nash equilibrium values, the political replacement rate for the period-one incumbent group is:

$$\Gamma(Z,\nu,\xi) = \begin{cases} \gamma\left(\hat{L}^O, \hat{L}^I, \xi\right) & Z > Z^O(\theta,\nu,\xi) \\ \gamma\left(0, \hat{L}^I, \xi\right) & Z^O(\theta;\nu,\xi) \geq Z > Z^I(\theta,\lambda_1,\xi) \\ \gamma(0,0,\xi) & Z^I(\theta,\lambda_1,\xi) \geq Z \ . \end{cases} \tag{4}$$

The turnover rate depends on which of the three cases in Proposition 2 is relevant, since these determine the investments in political violence. While it is clear that the probability of political replacement is lower in repression than peace, the comparison of either peace or repression with civil war is ambiguous.

We now draw out some comparative statics, which prove useful in our discussion of development policy and which link the rate of political replacement to Z, ν and ξ:

Proposition 3 *Suppose that Assumptions 1 and 2 hold. Then, the probability of political replacement varies with* $\{Z, \nu, \xi\}$ *as follows:*

1. *An increase in* Z *reduces the probability of political replacement when there is repression or civil war.*

2. *An increase in* ν *increases the probability of political replacement when there is a civil war.*

3. *An increase in* ξ *reduces the probability of political replacement when there is repression or civil war.*

The proof is in the Appendix.

This is an important result when it comes to studying the impact of violence on state-capacity investments since the likelihood that the incumbent holds on to power affects these decisions when θ is low. The first part follows from the fact that the incumbent fights relatively harder than the opposition when more is at stake. This is because γ_I rises faster than γ_O by Assumption 1c. The second part of the proposition follows from the fact that it becomes more costly for the opposition to use violence as ν goes up. This reduces

turnover when there is a civil war, as the opposition fights less intensively. It is also shifts up the threshold Z^O where civil war breaks out. As for the third part, the range of Z for which repression becomes wider as ξ increases. This is because, by Assumption 2, a higher value of ξ cuts the incumbent's trigger point for violence and raises the opposition's trigger point for violence. Within the repression and civil war regimes, a higher value of ξ makes the incumbent invest more in violence while the opposition invests less. Hence, it raises the probability that the incumbent group stays in power.

2.5 Investments in state capacity

To conclude the analysis of the equilibrium, we now consider investments in state capacities $\{\pi_2, \tau_2\}$. These are determined simultaneously with the violence decisions and maximize (2) taking L^O as given.

Choosing $\{\tau_2, \pi_2\}$ to maximize (2) yields the following Euler equations for legal and fiscal capacity:

$$\begin{aligned} \omega_\pi(\pi_2)[1 + (E(\lambda_2; Z, \nu, \xi, \theta) - 1)\tau_2] &\lessgtr \lambda_1 \mathcal{L}_\pi (\pi_2 - \pi_1) \\ \text{c.s.} \quad \pi_2 - \pi_1 &\gtrsim 0 \end{aligned} \tag{5}$$

$$\begin{aligned} \omega(\pi_2)[E(\lambda_2; Z, \nu, \xi, \theta) - 1] &\lessgtr \lambda_1 \mathcal{F}_\tau (\tau_2 - \tau_1) \\ \text{c.s.} \quad \tau_2 - \tau_1 &\gtrsim 0 \ , \end{aligned} \tag{6}$$

where

$$E(\lambda_2; Z, \nu, \xi, \theta) = \phi\alpha_H + (1 - \phi)E(\lambda_2|\alpha_L; Z, \nu, \xi, \theta)$$

is the *expected* value of period-2 public funds with

$$E(\lambda_2|\alpha_L; Z, \nu, \xi, \theta) = \begin{cases} \alpha_L & \text{if } \alpha_L \geq 2(1-\theta) \\ 2[(1-\theta)(1 - \Gamma(Z, \nu, \xi)) + \theta\Gamma(Z, \nu, \xi)] & \text{otherwise .} \end{cases}$$

These conditions set the marginal benefit from investments in state capacity, which depend on the expected marginal value of public funds. To understand the latter, observe that if $\alpha_L \geq 2(1-\theta)$, all spending is on the public good regardless of the state. However, if $\alpha_L < 2(1-\theta)$, then when $\alpha_s = \alpha_L$, then the state spends on transfers. The expected value of those transfers is $2[(1-\theta)(1 - \Gamma(Z, \nu, \xi)) + \theta\Gamma(Z, \nu, \xi)]$ which depends on the strength of institutions, θ, and the equilibrium rate of political survival $(1 - \Gamma(Z, \nu, \xi))$.

A lower probability of political replacement increases the value of public funds.

Equations (5) and (6) both illustrate the importance of the future value of public funds in determining investment incentives. For fiscal capacity, this is clear as it pays off in the form of an ability to raise more public funds in period 2. But the value of public funds matters also for legal capacity, as it carries an indirect benefit from investing through increased public revenues. If $E(\lambda_2; Z, \nu, \xi, \theta) > 1$, then fiscal and legal capacity are complements in the sense that an increase in the stock of one kind of state capacity raises the marginal return to investing in the other kind.

To pin down state capacities, we need two conditions. The first one is:

Cohesiveness $\alpha_L \geq 2(1-\theta)$.

This requires that θ be close enough to 1/2. Observe that, by Proposition 1, the cohesiveness condition also guarantees that the equilibrium is peaceful. The condition essentially guarantees that all government spending falls on public goods whatever the realization of α_s.

The second condition is:

Stability $\phi\alpha_H + (1-\phi)\, 2\left[(1-\Gamma(Z,\nu,\xi))(1-\theta) + \Gamma(Z,\nu,\xi)\,\theta\right] \geq 1.$

This condition says that the expected value of public spending is above unity (the value of private consumption) in a world where the cohesiveness condition fails and hence spending falls on transfers when $\alpha_2 = \alpha_L$. Whether this condition holds depends on the equilibrium level of political turnover. This is because transfers are more valuable to the incumbent *ex ante* when his group is more likely to retain office, which is true when $\Gamma(Z,\nu,\xi)$, the probability of being replaced by the other group, is low.

We now show that the model implies three types of states, when it comes to investing in state capacities.

The first possibility is a common interest state:

Proposition 4 *If Cohesiveness holds or ϕ is close to one, there is a common-interest state. Then,*

1. *there are investments in both kinds of state capacity*
2. *an increase in ϕ raises both fiscal-capacity and legal-capacity investments, whereas changes in R, ν, or ξ have no effects on investments.*

For this result to hold, it is sufficient that θ is close enough to one half, or ϕ has approached 1, so that all future marginal public revenues are allocated to public goods. If so, the incumbent in period 1 is reassured that the state will use public resources for common-interests, i.e., public goods regardless of who is in power in period 2. Moreover, $E(\lambda_2; Z, \nu, \xi, \theta) = \phi\alpha_H + (1-\phi)\,\alpha_L > 1$ so future public funds are valuable enough to make a positive marginal return to investment in fiscal capacity. A higher value of ϕ raises investments in both aspects of that state by making future government revenue more valuable and, given that state capacities are complements raises investment in both fiscal and legal capacity. Finally, by Proposition 1, common-interest states are always peaceful, since there is no redistribution to fight about.

The second possibility is a redistributive state:

Proposition 5 *If Cohesiveness fails but Stability holds, the state is redistributive with public revenues used to finance transfers when $\alpha_s = \alpha_L$. Then,*

1. *there are investments in both kinds of state capacity.*
2. *an increase in ϕ raises both fiscal-capacity and legal-capacity investments, as do (weakly) higher values of R, ν or ξ.*

In a redistributive state, the incumbent government uses available funds to make transfers when $\alpha_s = \alpha_L$. It now chooses to invest in state capacity, as it is sufficiently likely to stay in power and to have use of that capacity as an incumbent. The stability condition implies that $E(\lambda_2; Z, \nu, \xi, \theta) > 1$ so that investment in fiscal capacity and legal capacity are both worthwhile. Moreover, both types of state capacity are complements.[14] If the incumbent finds itself under the risk of repression or civil war – i.e., Z is above one or both of trigger points Z^I and Z^O – parameter changes that raise the intensity of repression or civil war, and hence raise the chances that the incumbent survives, promotes higher investments in both fiscal and legal capacity. A stronger redistributive state may thus go hand in hand with more repression.

Finally, we have the possibility of a weak state:

Proposition 6 *If both Cohesiveness and Stability conditions fail, the state is weak. Then, there is no incentive at all to invest in fiscal capacity and the*

[14] This complementarity is reinforced by the fact that higher state capacity of either kind increases Z and hence (by Proposition 3) reduces the probability of being replaced in office.

level of legal-capacity investment is lower than with a common interest or redistributive state, all else equal.

The fact that the stability condition fails now implies that the marginal benefit of investing in fiscal capacity is negative, $E(\lambda_2; Z, \nu, \xi, \theta) < 1$. The non-cohesiveness of political institutions and the high rate of political turnover means that any fiscal capacity investments are likely to be used by the other group for redistributive purposes once it takes office. This deters investment in the state and we see a weak state together with high political instability associated with political violence. Legal capacity investment is lower, because there is longer a positive benefit from raising wages coming through the government budget constraint.

2.6 The State Space

Based on the results in this section, we can discuss the causes and consequences of state fragility. Our model shows clearly how the two main pathologies of states, political violence and low state capacity, have common roots. It ties these pathologies together, particularly through parameters ϕ and θ. High θ, reflecting cohesive political institutions, and high ϕ, reflecting strong common interests, lead to high investments in fiscal and legal capacity, as well as low violence. This is the case of a peaceful and prosperous state – the happy families in our quote from Anna Karenina in the introduction.

But if θ and ϕ are low, the details of the state pathologies matter, leaving open the possibility of low investments in fiscal and legal capacity, as well as repression or conflict – these are the unhappy families which are unhappy in their own way. Specifically, parameters affecting conflict (R, ξ, ν) become relevant to the outcome.

The results are summarized in Table 1. Whether repression is associated with a weak or redistributive state depends on equilibrium political stability. When fighting is costly (high ν) and the advantage of the incumbent is large (high ξ), we expect a redistributive state and repression to go together. This is the case of an effective state in repression terms, which holds an incumbent in power despite weak political institutions.

Civil war is generally associated with weak or redistributive regimes. Weak states and civil wars arise under circumstances in which an insurgency is relatively easy to organize (low ν) and the government is not effective in responding to it if it happens (low ξ). An increase in military effectiveness

reduces the prospect of turnover and increases incentives to invest as in a redistributive state. Another decisive factor for which particular pathology we will observe is the amount of resource rents or foreign (cash) aid. For example, a higher degree of resource dependence (high R) raises the likelihood that we see civil war rather than repression.

The approach taken here implies that the fundamental determinants of fragile states are the strength of common interests, the extent of cohesive institutions, the amount of resource rents, and the technologies for organizing and conducting violence. Phenomena like civil war, repression, low income per capita, low spending on common-interest goods, low taxation and weak enforcement of property rights are all symptoms rather than determinants.

Most of the existing literature on fragile states is not derived from any underlying theory, which explains why it tends to mix up symptoms and determinants. For example, one criterion that is frequently used in fragile state indices is low income per capita. While it is true that this may increase incentives for violence, all else equal, it is only an intermediate factor.[15]

An advantage of putting together a specific dynamic theoretical structure – however simple – is that we get a clear sense of the margins where we may see an equilibrium response, when an outside donor intervenes in fragile states. In the next section, we thus use our framework to explore the consequences of state fragility for development policy. We will find that common-interest and peaceful states make the task of supporting development quite easy. However, once we leave this fortunate state of affairs, the details of the pathologies matter.

3 Development Assistance

As Table 1 illustrates, a state away from the top right-hand corner, may have a variety of potential symptoms and these have a variety of causes. Moreover, the problems may change in response to shocks (such as hikes in resource prices or natural disasters). Effective development assistance has to tailor the right form of intervention to circumstance and institutional context. This opens up the menu of possibilities to include the right mix of budgetary, project, military and technical assistance, and to make the right amount of conditionality credible.

[15] This argument is reinforced further by introducing private capital formation as in Besley and Persson (2011, Chapter 5).

In our analysis, we assume that the primary objective of the international community is the ex ante welfare of the citizens of a country to which it is providing development assistance. This neglects the role of strategic objectives, which could explain the willingness of countries to donate.[16] We also assume away coordination problems, by analyzing a single intervention, rather the plethora of sometimes uncoordinated action that characterizes the aid industry. Our perspective thus supposes that a foreign government or multilateral organization makes a transfer of resources to a developing country. The question is how this affects the behavior of the receiving government and, ultimately, the welfare of the citizens.

Our model suggests a number of natural margins to focus on. First, the *policy-dimension*: $\left(g_s, r_s^I, r_s^O\right)$. Does development assistance increase or decrease spending on public goods or the amount of redistributive transfers? Second, the *state capacity dimension*: (π_s, τ_s). In which way do different forms of development assistance influence the incentive to build fiscal or legal capacity? Third, the *political violence dimensio*n: $\left(L^I, L^O\right)$. How does development assistance affects incentives of both the incumbent and opposition to use violence as a means of winning or securing power?

3.1 Cash Aid

We will proceed by applying a cost-benefit style analysis to the model. Suppose that an aid agency is considering spending some aid resources in a particular country at date s. Let the shadow price of this aid in the donor country be $\hat{\lambda}$. Depending on circumstances and institutions, the additional resources will raise public-goods spending, state-capacity investments, transfers (or, in a more general model, lower taxation). We will model cash aid as an increase in the recipient government's budget which we denote by ΔR. This acts like an increase in Z in the model above.

The timing of the model is exactly as in Section 3, except that in between stages 2 and 3 the aid agency commits resources ΔR for future aid that will augment the period-2 budget. In deciding whether to offer aid, we assume that the aid agency can see through the subsequent equilibrium choices by government thus correctly anticipating the recipient country's responses. In effect, the aid agency is applying backwards induction to the subsequent moves in the policy and investment game.

[16] See the discussion in OECD (2010).

We begin with the following benchmark result:

Proposition 7 *In a common-interest state, cash aid is worthwhile if and only if* $\phi\alpha_H + (1-\phi)\,\alpha_L > \hat{\lambda}$.

The logic of this result is clear. If $2(1-\theta) \geq \alpha_L$, all future spending is devoted to public-goods regardless of the realization of α_2. There is also no conflict risk in this case (as showed in Proposition 1). In *ex ante* terms, therefore ΔR will be spent on public goods, with value $\phi\alpha_H + (1-\phi)\,\alpha_L$. This is compared to the cost of $\hat{\lambda}$.

In this case, observe that it would not make any difference whether development assistance comes as budgetary aid or as direct support of a specific project. There is a complete congruence of interest between the aid donor and the recipient government.

Suppose instead that the cohesiveness condition fails, but there is no propensity to political violence. When $\alpha_2 = \alpha_L$, the additional resources are spent on transfers rather than public goods. In this case, Proposition 7 is modified to:

Proposition 8 *In a weak or redistributive, but peaceful, state, cash aid is worthwhile if and only if* $\phi\alpha_H + (1-\phi) > \hat{\lambda}$.

In this case, the value of aid is lower than in the benchmark case of Proposition 7 and aid does not yield a gross return above unity – the marginal utility of consumption – as the probability of a high value of public goods $\phi \to 0$.[17] This result chimes with the frequently made observation, discussed in Collier and Dollar (2004), that aid impact is better when institutions are stronger.

Propositions 7 and 8 allow us to reflect upon an observation made by Peter Bauer, which Temple (2010) has christened the *Bauer Paradox*. His view is succinctly stated in the following quote:

> "A government unable to identify ... projects or collect taxes is unable to be able to use aid productively" (Bauer (1975), page 400).

[17] In the benchmark model, granting cash aid in a common interest state makes no difference to investments in state capacity. But this is due to the assumption that utility is linear in public goods. In the case where $V(g)$ is increasing and concave, this property of the model is no longer true, and the analysis captures some aspects of the more sceptical view on aid and its impact. This is explored in Besley and Persson (2011, Chapter 6).

Being able to identify projects is like having high α_H and/or high ϕ. Governments that are able to collect taxes (have high fiscal capacity) will likely have more consensual institutions (Proposition 4). Hence, these are the governments where Proposition 7 applies. But when θ is low and ϕ is low, aid is less likely to be used productively and the government is less likely to build fiscal capacity.

We now consider what happens in the case where the cohesiveness condition does not hold and where ϕ is low enough or R high enough, so that the state is prone to political violence. This gives two additional considerations in the comparative statics assessing the effect of cash aid on welfare. First, there is an impact on the use of political violence, and second there is an effect, working through political stability, on investments in state capacities.

The effect of cash aid is like an increase in Z, which – as we know, from Proposition 3 – raises the use of violence. This has two welfare effects. First, it leads to more resources being allocated to violence, an activity which is directly unproductive and has no direct welfare benefits. Second, when deciding on violence, each group does not internalize this effect on the welfare of the other group, leading to strategic inefficiency. We summarize this as:

Proposition 9 *In a weak or redistributive state, which is prone to political violence, a small increase in cash aid is welfare improving if* $\phi\alpha_H + (1-\phi) - \omega(\pi_1)\frac{dL}{dZ} > \hat{\lambda}$ *where*

$$\frac{dL}{dZ} = \begin{cases} \left[\lambda_1 \frac{dL^I}{dZ} + \nu \frac{dL^O}{dZ}\right] & \text{if } Z > Z^O(\theta;\nu,\xi) \\ \lambda_1 \frac{dL^I}{dZ} & \text{if } Z^O(\theta;\nu,\xi) \geq Z > Z^I(\theta,\lambda_1;\xi). \end{cases}$$

With $\alpha_2 = \alpha_H$, we have a common-interest state and resources are spent on public goods. When $\alpha_2 = \alpha_L$, resources are spent on transfers. The key point is now that aid will have an impact on equilibrium violence reflected in the third term deducted from the value of any public goods that are being created. Compared to Proposition 8, therefore, it is less likely that cash aid is welfare increasing due to the additional welfare cost of violence. Indeed, cash aid could actually lower ex ante welfare. This is more likely when ϕ is low.

The enhanced violence affects political stability in line with the results in Proposition 3.

Proposition 10 *In a weak or redistributive state, which is prone to political violence, cash aid can increase political stability and may increase investment in fiscal and legal capacity.*

This effect comes through the fact that foreign aid (by Proposition 3) allows incumbents to entrench themselves and cement their control on power, when institutions are non-cohesive. The most clear-cut example is the case of a repressive regime. Once aid is given, the incentive to hang on to power is enhanced. As we have seen, in Proposition 5, greater repression induces more political stability, which results in more state-capacity investment all else equal. But the benefits are allocated in part to increased military force and accrue disproportionately to the incumbent group.

3.2 Conditionality

The assumption in the previous subsection is that government cannot contract directly over the policy and investment decisions when it grants aid. Conditionality should be thought of as a contracting problem where the donor government specifies an array of observable and verifiable decisions by the recipient government in exchange for ΔR. As with any interesting contracting problem, the real issue is what can reasonably supposed to be observed and enforced. The latter is a particular issue, given that there is nothing equivalent to an international court which can enforce agreements. Indeed, this is often thought of as a major obstacle to effective conditionality.[18]

It is interesting to see how the earlier results might be affected by (enforceable) conditionality. Propositions 8 and 9 highlight the possibility that conditionality to make sure that aid is spent on public goods could be valuable. In the case of Proposition 9, it would ensure that fewer resources are spent on violence. However, for this latter effect, it would have to be the case that conditionality is binding on both the incumbent and the opposition if the latter wins office in the struggle for power.

But these prospective benefits require that conditionality could be credibly enforced. An interesting agenda for future research would be to combine aspects of our framework with explicit modeling of mechanisms that might help achieve credible enforcement, as in Svensson (2003). External players potentially have several prospective instruments, whereby they can give a future prize in return for present and continued good behavior. This could include membership in or association with desirable clubs like EU (something used by EU to influence political and economic reform in Turkey and

[18] See Svensson (2000, 2003) for early analyses of the credibility problems wih conditionality.

earlier in Eastern Europe). Another possibility might involve debt concessions (or free-trade agreements) like the ones currently negotiated by EU with Pakistan and with some African countries, and by the US with several Latin-American countries.

3.3 Non-Cash Development Assistance

In this section, we consider the possibility of development assistance in other forms than cash aid, as captured by influence on other parameters of the model.

Technical Assistance Technical assistance refers to the transfers of skills and knowledge that can be useful in improving how government works. Estimates from the OECD (2010b) suggest at least one sixth of direct official aid in 2008 is given in this form. Some people refer to technical assistance as *phantom aid,* since it is often dispersed via international consultants who reside in the donor country. Evaluating the returns to technical assistance is notoriously difficult, and is likely to be specific to the context and the nature of the intervention in question. Technical assistance can come in many forms. Our model suggests a focus on two of these: (i) efforts to increase the benefits or reduce the costs of providing public goods, and (ii) efforts to lower the cost of investing in state capacity. We will discuss these two cases here and demonstrate how their impact can be thought of in our analytical framework.

Consider first technical assistance that helps to identify good projects. This can be represented in the model as an attempt to raise α or ϕ. An important line of development research in recent years has used randomized control trials (RCTs) to identify the value of public interventions.[19] These can be thought of as trying to find ways of better allocating resources to public goods by identifying high benefit interventions. Such interventions also raise the investments in state capacity (by Propositions 4 and 5). For given θ, it also makes it less likely that there will be conflict (by Proposition 2) and increases the probability of creating a common-interest state. We record this as:

Proposition 11 *Technical assistance that raises α_H or ϕ, increases welfare*

[19] See Duflo et al (2007) for a discussion of these methods.

and investment in state capacity. It also reduces the likelihood of political violence.

Technical assistance can also be aimed towards increasing α_L. In our framework this could even lead to the creation of a common-interest state with its virtuous consequences. In the case describe here, the cost of the intervention should be weighed against the increased public goods that will be provided (since fiscal and legal capacity increase) and the value of the extra public goods that are generated by these investments.

Our model shows the same complementarity between the value of aid and cohesive institutions that we saw in the case of cash aid. Technical assistance is more powerful in countries where public resources are more likely to be allocated for the common good. So, the return to RCTs will be lower in weak or redistributive states if they are intended to inform government about the value of good policy.

While these observations are useful, they sweep a host of important problems under the rug. First, there is a scaling-up issue. Can the conditions in small controlled trials really be replicated when they are implemented in a large program by the government? This question is particularly acute since many RCTs are implemented directly by NGOs, with limited contact with the recipient government. Second, in assuming that the government budget will be spent either on public goods or transfers, depending on the value of α, we have not considered any issues of corruption or predation run by a small elite (see Section 4).

Another type of technical assistance would be to reduce investment costs – improving state capabilities. These interventions are common in development and can be represented in the model as shifts in the functions $\mathcal{F}(\cdot)$ and $\mathcal{L}(\cdot)$. In this case, we have:

Proposition 12 *Technical assistance that reduces the cost of investing in state capacity, i.e. reduces $\mathcal{F}(\cdot)$ and $\mathcal{L}(\cdot)$, increases welfare and investment in state capacity. This tends to increase the likelihood of political violence, all else equal.*

The result on state capacity follows from the Euler equations (5) and (6). Our framework makes sense of these type of interventions. Examples include giving advice on tax collection, or the creation of specialized courts to expedite the resolution of business disputes. It could even mean advice

about fundamental changes in the nature of the legal code. The (perhaps surprising) effect on political violence comes from the fact that Z goes up when state-capacity investments increase which, all else equal, may lead to an increase in political violence

Military assistance We now consider the role of military assistance within the confines of our simple model. One aspect of such assistance may be to give advice on military technology/strategy, which can be modeled as changes in ξ. This could be training or provision of weapon systems and intelligence. In principle, this could be offered either to the government or the opposition. External governments could also directly intervene by providing manpower to either the government or rebels. We focus on the case, where support is offered to the incumbent government.

Our core result is:

Proposition 13 *Military assistance that increases ξ, augmenting the military capacity of the incumbent government, increases the parameter range in which there is repression. This increases political stability and investment in fiscal and legal capacity.*

If institutions are weak, the higher political stability due to higher repressions raise state capacity investments (by Propositions 3 and 5). But this comes at the price of increasing the entrenchment of the incumbent. In effect, this can create a rentier state, where the opposition group is frozen out of power. Military intervention to help any incumbent will therefore tend to increase the incentives for the incumbent to invest. But it is not a substitute for more consensual institutions (higher θ). This story seems relevant, perhaps especially for the cold war, but also for modern-day fragile states with ongoing or latent conflict.

Post-conflict assistance Finally, we consider attempts by external actors to assist in the process of promoting peace in post-conflict situations. Our model allows us to represent this in a very stylized fashion.

Peace-keeping or disarming the rebels can be thought of as raising ν. This reduces the parameter range in which there is conflict and increases political stability (by Proposition 3). Many post-conflict settlements can

also be thought of as efforts to raise θ (diminishing the gain to the winner).[20] This will reduce the risk of violence (by Propositions 1 and 2). However, the latter effect requires that the interventions are expected and hence credible *ex ante*. A recent example of such a mechanism was attempted in Haiti after the recent earthquake, where the high influx of aid has been disbursed outside of the government structures with former U.S. President Bill Clinton playing a key role. We summarize this in:

Proposition 14 *Post-conflict assistance that raises ν or θ will lead to greater investments in state capacities and reduce the parameter range in which there is violence.*

Of course, post-conflict reconstruction may have a wider remit part of which could involve direct efforts to increase τ and π. However, post-conflict assistance generally comes with a good deal of cash aid, making reforms to raise θ and lower ν doubly important.

A related question is if we can think about a window of opportunity in weak or collapsed states. Can external players assist in designing a political mechanism and/or institutions capable of changing the internal political equilibria in countries, such as Iraq, Afghanistan, and Somalia? Historical experience cautions us that a simple export or duplication of existing institutions need not work in many cases. Thus, almost all Latin American states modeled their constitutions on the US one in the 19^{th} century, but with very different results. The commonwealth countries of India and Pakistan started off with the same constitutional framework, provided by the 1935 Government of India Act, but with very different outcomes.

Changing political mechanisms and institutions would be like changing θ and thereby potentially altering the type of state. To discuss this possibility, we need to think carefully about the domestic incentives for undertaking endogenous political reform. Such an extension of our analysis is briefly discussed in the next section.

[20] It may also be the case that there are measures to increase θ which fit better under technical assistance – e.g., to improve the monitoring of public resource use making it more transparent which group is benefitting from transfers.

4 Extensions

The structure we have proposed in this paper is simple and stylized and the analysis can be extended in many directions. We now briefly sketch five possibilities.

Donor preferences for distribution In Propositions 7 and 8, the *ex ante* value of a dollar of transfers is always greater than one; the worst that can happen is that aid ends up as higher private consumption. The donor country could however, care about the distribution of such transfers. This will tend to reduce the value of transfers, to the extent that the donor is egalitarian and $\theta < 1/2$. To illustrate this point, suppose that the donor has a maximin preference over distribution between the two groups. Then cash aid is worth only 2θ (< 1) when $\alpha_s = \alpha_L$ in the non-cohesive case of Proposition 8. Then aid is worthwhile only if $\phi\alpha_H + (1-\phi)\,2\theta > \hat{\lambda}$ and the left-hand side could now be smaller than one.

Quasi-linear preferences We have worked with the stylized case where utility is linear in public goods. Suppose instead that preferences are $\alpha_s V(g_s) + x_s^J$ where $V(\cdot)$ is increasing and concave – as we mentioned as a possibility in Footnote 16 above. As shown in Besley and Persson (2011, Chapter 6) budgetary aid now directly depresses the demand for fiscal capacity since the marginal value of public goods is lower (for any given level of fiscal capacity). Aid will also have a smaller effect on public goods to the extent that it crowds out domestically generated fiscal capacity. Both of these effects lower the impact of aid on public-good provision.

Predatory states Our model does have redistribution across groups, but assumes that the government faithfully represents the interests of the entire incumbent group. But a feature of many countries in weak states is that political elites are able to capture the state and to benefit disproportionately from state transfers. Such conditions are often referred to as predatory states.[21] A very simple way to think about a predatory state in our framework is to suppose that only a fraction $(1-\varkappa)$ of the resources available for

[21] This is often more than just elite control but also refers to the kind of inefficient predatory practices that elites use to extract resources as discussed in Besley and Persson (2011, Chapters 3, 5 and 7).

transfers go to broad based transfers across the groups to which the cohesiveness parameter, θ, applies. The remaining fraction, $\varkappa$, is captured by an incumbent elite of size $e^I < 1$. Then the payoff to a member of the incumbent elite payoff is:

$$\alpha_s g_s + (1 - \tau_s)\,\omega\,(\pi_s) + \left[(1 - \varkappa)\,2\,(1 - \theta) + \frac{\varkappa}{e^I}\right]\,[R + \tau_s \omega\,(\pi_s) - g_s - m_s]\ .$$

If $\varkappa > 0$, this change in the model will affect both policy and investment incentives. For public goods to be provided, we now require that

$$\alpha_s \geq (1 - \varkappa)\,2\,(1 - \theta) + \varkappa / e^I$$

as the equivalent of the cohesiveness condition. Since $e^I < 1$, this is more stringent than the cohesiveness condition stated above and this condition may fail even if $\alpha_s = \alpha_H$ and $\theta = 1/2$. Thus, it is more likely that R goes into transfers than in the baseline model. Moreover, these transfers could mainly be funneled to elites, depending on the value of $\varkappa$. Both of these effects make the prize from capturing the state greater, and this tends to intensify the incentives for political violence if we assume that violence is indeed organized by elites.

Endogenous political institutions We have taken θ to be exogenous. But one critique of aid is that it leads to a deterioration in institutional quality. The model can be extended to capture this by supposing that the incumbent can also make decisions in period one that affects θ_2. As Besley and Persson (2011, Chapter 7) discuss in detail, there will be a tendency towards picking a lower θ_2 when γ is low. To the extent that an increase in R reduces γ, as we predict it would in Proposition 3, larger flows of cash aid will lead to worse institutions. The key to cohesive institutions then lies in understanding which factors might limit the ability of states to lower θ and/or γ, rather than in these parameters *per se*. According to the logic of our model, this is an important area where more work is needed, given the importance of cohesive institutions in reducing political violence and promoting state-capacity investments.

Private accumulation The only engine of growth in our model is higher levels of legal capacity. This is, of course, an abstraction to focus on a specific mechanism working through investments in the state and their consequences.

The model can also be extended to include "standard" dynamic incentives to increase income per capita such as the accumulation of capital. The analysis in Besley and Persson (2011, Chapters 3 and 5) suggests that the pathologies of the state that we have identified here will generally spill over into weaker incentives for individuals to invest, further compounding the consequences of state fragility and reducing incomes. This will amplify the link between low incomes and state fragility.

5 Concluding Remarks

We have presented a framework that makes sense of current policy debates about impediments to development in fragile states. While attempts to define state fragility precisely are open to interpretation, they are crucial in reminding us that political violence and ineffective states are commonplace in many low-income countries. Our analysis shows how such situations can be understood and highlights some features of the economic environment which may perpetuate the problem. Table 1 summarizes our insights and underlines the common roots of state pathologies. In broad terms, the deepest root is the absence of common interests reinforced by non-cohesive institutions. Having understood this, the question of what determines the cohesiveness of institutions and whether this can be changed becomes of first-order importance.

It is important to acknowledge that this paper is a purely theoretical exercise. In general, we know precious little about the empirical importance of the channels identified by our theory, and even less about their importance in the specific states plagued by the pathologies highlighted in the paper. Better knowledge can only be acquired with appropriate empirical analysis on a case-by-case basis.

Our *Anna Karenina Principle* underlines the importance of heterogeneity. This heterogeneity may, to some degree, reconcile the different positions in the debate on development policy which we discussed in the introduction. Our model suggests, along with aid optimists, that there is the possibility of advantageous development assistance. But identifying the form that this will take requires a great deal of knowledge about country circumstances and institutions. One could thus be an aid pessimist or an aid optimist, depending on the form of aid and an assessment of the ability of aid agencies to understand its impact in specific contexts.

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6 Proof of Propositions

Proof of Proposition 2. The complementary slackness conditions for the problems faced by L^I and L^O assuming that $L^I > 0$ and $L^O > 0$ are:

$$\begin{aligned} -\gamma_I\left(L^O, L^I; \boldsymbol{\xi}\right) xZ - \lambda_1 &\lesseqgtr 0 \\ \text{c.s. } \bar{L}^I &\geq L^I \geq 0. \end{aligned}$$

and

$$\begin{aligned} \gamma_O\left(L^O, L^I; \boldsymbol{\xi}\right) xZ - \nu &\lesseqgtr 0 \\ \text{c.s. } \bar{L}^O &\geq L^O \geq 0. \end{aligned}$$

where $x = (1-2\theta)2\left(1-\phi\right) \in [0,2]$.

First, we show that, at any interior solution, resources devoted to fighting by both groups is increasing in Z. To see this, observe that differentiating and using the first-order conditions when they hold with equality yields:

$$\left[\begin{array}{cc} -\gamma_{II}xZ & -\gamma_{IO}xZ \\ \gamma_{IO}xZ & \gamma_{OO}xZ \end{array}\right]\left[\begin{array}{c} dL^I \\ dL^O \end{array}\right] = \begin{array}{c} \gamma_I x dZ \\ -\gamma_O x dZ \end{array} . \tag{7}$$

Define $\Omega = \left[-\gamma_{II}\gamma_{OO} + \left(\gamma_{IO}\right)^2\right] x^2 Z^2 > 0$. Solving (7) using Cramer's rule yields:

$$\frac{dL^I}{dZ} = \frac{x^2 Z\left[\gamma_I\gamma_{OO} - \gamma_O\gamma_{IO}\right]}{\Omega} > 0$$

and

$$\frac{dL^O}{dZ} = \frac{x^2 Z\left[\gamma_{II}\gamma_O - \gamma_I\gamma_{IO}\right]}{\Omega} > 0 .$$

where we have used both parts of Assumption 1**d**.

We now derive two trigger points for violence. Define $\hat{L}\left(Z\right)$ from

$$\begin{aligned} -\gamma_I\left(0, \hat{L}\left(Z\right); \boldsymbol{\xi}\right) xZ - \lambda_1 &\lesseqgtr 0 \\ \text{c.s. } \bar{L}^I &\geq \hat{L}\left(Z\right) \geq 0 . \end{aligned}$$

It is simple to check that this is an increasing function of Z under Assumption 1**b**. Clearly with $L^O = 0$, $L^I = \hat{L}\left(Z\right)$. We can define $Z^I(\theta; \boldsymbol{\xi})$ from $\hat{L}\left(Z\right) = 0$, i.e.,

$$Z^I(\theta; \boldsymbol{\xi}) = \frac{-\lambda_1}{\gamma_I\left(0, 0; \boldsymbol{\xi}\right) x} .$$

Next, define $Z^O(\theta;\boldsymbol{\xi})$ implicitly from

$$\gamma_O\left(0,\hat{L}(Z^O(\theta;\boldsymbol{\xi})\right)xZ^O(\theta;\boldsymbol{\xi})=\nu\ .$$

The expression for $\frac{dL^O}{dZ}$ implies that for $Z\geq Z^O$, we must have $L^O>0$.

As the next step, we prove that $Z^O(\theta;\boldsymbol{\xi})>Z^I(\theta;\boldsymbol{\xi})$. Suppose not, then

$$\gamma_O\left(0,0;\boldsymbol{\xi}\right)xZ^O(\theta;\boldsymbol{\xi})=\nu\ .$$

If so,

$$Z^O(\theta;\boldsymbol{\xi})=\frac{\nu}{\gamma_O\left(0,0;\boldsymbol{\xi}\right)x}\leq Z^I\left(\theta;\boldsymbol{\xi}\right)=\frac{-\lambda_1}{\gamma_I\left(0,0;\boldsymbol{\xi}\right)x}\ ,$$

or

$$\frac{-\gamma_I\left(0,0;\boldsymbol{\xi}\right)}{\gamma_O\left(0,0;\boldsymbol{\xi}\right)}<\frac{\lambda_1}{\nu}\leq\frac{\alpha_H}{\nu}\ ,$$

which contradicts Assumption 1**c** for all values of θ.

Finally, it is easy to see from the explicit definition that $Z^I(\theta;\boldsymbol{\xi})$ is an increasing function. Using the implicit definition of $Z^O(\theta;\boldsymbol{\xi})$, and the fact that $\hat{L}\left(Z^O(\theta;\boldsymbol{\xi})\right)$ is (weakly) increasing, it follows that this function is increasing as well. This concludes the proof of the proposition. ■

Proof of Proposition 3. Part 1 is proved as follows. First, suppose that there is repression then the result follows since Assumption 1 implies that the incumbents payoff is concave in L^I and Z increases the marginal benefit to fighting. Now suppose that there is civil war. Differentiating (4) with respect to Z yields:

$$\begin{aligned}\Gamma_Z\left(Z,\nu,\xi\right) &= \gamma_I\frac{dL^I}{dZ}+\gamma_O\frac{dL^O}{dZ}\\ &= \frac{\left[\left(\gamma_I\right)^2\gamma_{OO}+\left(\gamma_O\right)^2\gamma_{II}-2\gamma_I\gamma_O\gamma_{IO}\right]}{\left[-\gamma_{II}\gamma_{OO}+\left(\gamma_{IO}\right)^2\right]Z}<0\end{aligned}$$

where we have used the comparative static result in (7) and Assumption 1**c**.

To prove part 2, observe that under repression, there is no effect on $\hat{L}^I$ from changing ν since $L^O=0$. Now observe that with civil war, then as ν increases, the effect on violence is given by:

$$\left[\begin{array}{cc}-\gamma_{II}xZ & -\gamma_{IO}xZ\\ \gamma_{IO}xZ & \gamma_{OO}xZ\end{array}\right]\left[\begin{array}{c}dL^I\\ dL^O\end{array}\right]=\begin{array}{c}0\\ d\nu\end{array}\ . \tag{8}$$

Differentiating (4) with respect to ν and using Cramer's rule in 8), we have:

$$\begin{aligned}\Gamma_\nu(Z,\nu,\xi) &= \gamma_I\frac{dL^I}{d\nu}+\gamma_O\frac{dL^O}{d\nu} \\ &= \frac{\left[-\gamma_{II}\gamma_O+\gamma_I\gamma_{IO}\right]}{\left[-\gamma_{II}\gamma_{OO}+\left(\gamma_{IO}\right)^2\right]2\left(1-2\theta\right)Z^2}<0\end{aligned}$$

by Assumption 1**c**.

Now we turn to part 3. First, suppose that there is repression then the result follows since Assumption 1 implies that the incumbents payoff is concave in L^I and ξ increases the marginal benefit to fighting. Now suppose that there is civil war. Then as ξ increases, the effect on violence is given by:

$$\left[\begin{array}{cc}-\gamma_{II}xZ & -\gamma_{IO}xZ \\ \gamma_{IO}xZ & \gamma_{OO}xZ\end{array}\right]\left[\begin{array}{c}dL^I \\ dL^O\end{array}\right]=\begin{array}{c}\gamma_{I\xi}\left(L^O,L^I;\boldsymbol{\xi}\right)xZd\xi \\ -\gamma_{O\xi}\left(L^O,L^I;\boldsymbol{\xi}\right)xZd\xi\end{array}. \tag{9}$$

where, as above, $x=(1-2\theta)2$. Differentiating (4) with respect to ν and using Cramer's rule in (9), we have:

$$\begin{aligned}\Gamma_\nu(Z,\nu,\xi) &= \gamma_I\frac{dL^I}{d\xi}+\gamma_O\frac{dL^O}{d\xi} \\ &= \frac{\gamma_{O\xi}\left[\gamma_{II}\gamma_O-\gamma_I\gamma_{IO}\right]+\gamma_{I\xi}\left[\gamma_{OO}\gamma_I-\gamma_{IO}\gamma_O\right]}{\left[-\gamma_{II}\gamma_{OO}+\left(\gamma_{IO}\right)^2\right]Z}<0\end{aligned}$$

using Assumption 1**c** and Assumption 2. This proves the result. ■

Table 1
The state space

	Weak	Redistributive	Common interest
Peace	low ϕ, θ, R	high ϕ low θ, R	high θ, ϕ
Repression	low θ, ϕ, ξ, R high ν	low θ, ϕ, R high ν, ξ	n/a
Civil war	low θ, ϕ, ξ high ν, R	low θ, ϕ, ν high ξ, R	n/a

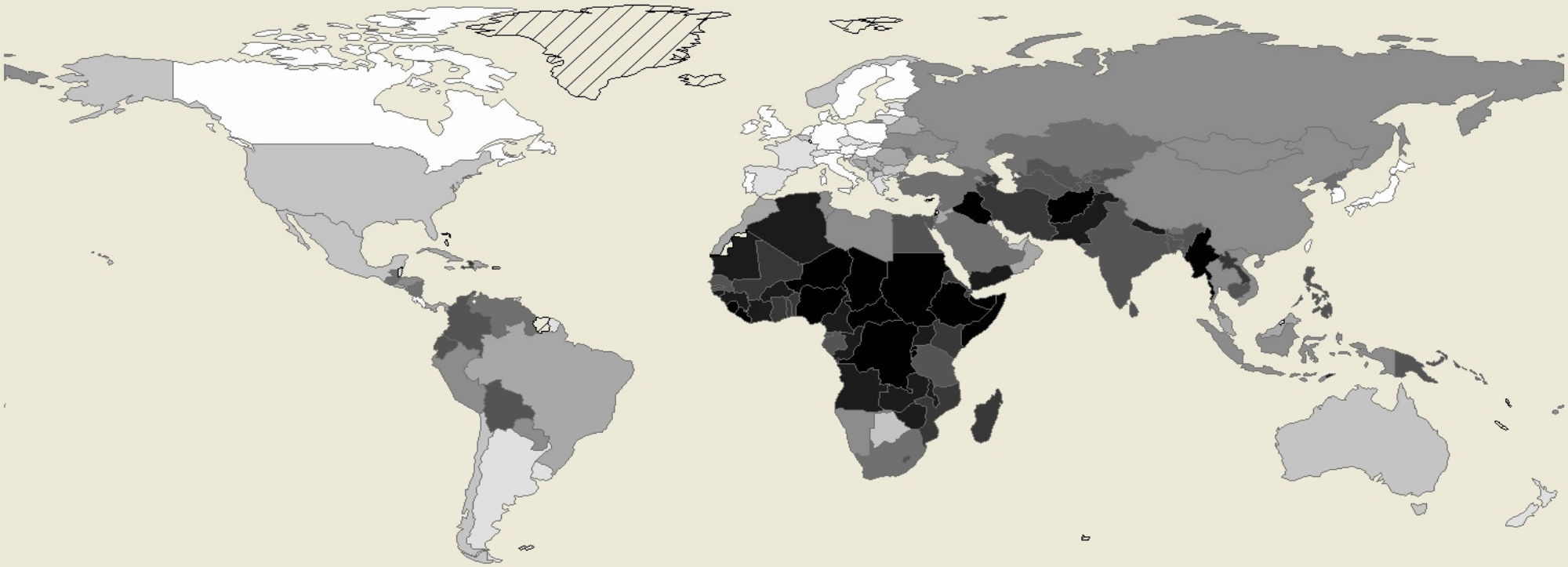

Figure 1 Polity IV Fragile States Index 2009